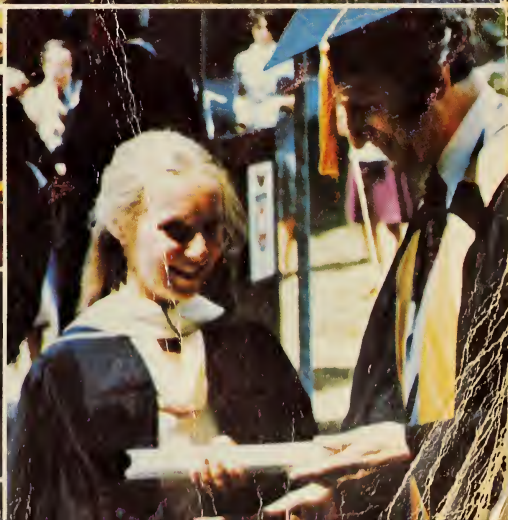
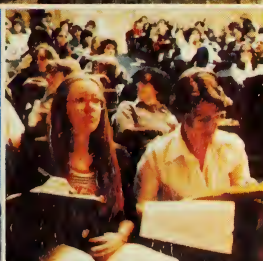
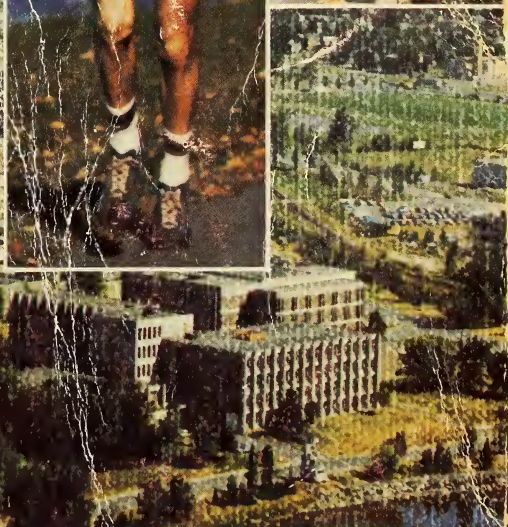


Carleton University



Undergraduate Calendar



1980
1981



Carleton University

Thirty-ninth Annual
Undergraduate Calendar
for the Academic Year 1980-81

School of Computer Science	55
School of Continuing Education	69
Faculty of Arts	75
Faculty of Social Sciences	79
Faculties of Arts and Social Sciences	83
School of Commerce	95
School of Journalism	100
School of Public Administration	105
Institute of Soviet and East European Studies	108
Faculty of Engineering	289
School of Architecture	321
School of Industrial Design	339
Faculty of Science	355
Institute of Biochemistry	363
Interdisciplinary	427

Carleton University
Colonel By Drive
Ottawa, Canada K1S 5B6
Telephone 613-231-4321

This Calendar is published several months in advance of the beginning of the academic year. The University reserves the right to make whatever changes may be required, including alteration of the various fee schedules and cancellation of particular courses.

Table of Contents

This is Carleton University

- 7 Introducing Carleton
- 9 Carleton Glossary
- 10 The Academic Year
- 13 General Information
- 15 Course Numbering System
- 16 Graduate Studies and Research
- 17 University Office Guide
- 20 Student Services
- 25 Students' Association
- 26 Alumni Association

General Regulations

- 29 Admission Requirements and Procedures
- 35 Summary of Undergraduate Degree Programs
- 40 Registration
- 43 Academic Standing
- 46 Fees
- 50 University Library/Health Regulations
- 51 Academic Dress

School of Computer Science

- 55 School of Computer Science

School of Continuing Education

- 69 School of Continuing Education

Faculty of Arts

- 75 Faculty of Arts (General Information)

Faculty of Social Sciences

- 79 Faculty of Social Sciences (General Information)

Faculties of Arts and Social Sciences

- 83 Degree, Diploma and Certificate Programs
- 95 School of Commerce
- 100 School of Journalism
- 105 School of Public Administration
- 108 Institute of Soviet and East European Studies
- 111 Departments, Committees, Concentrations, Programs

Faculty of Engineering

- 289 Faculty of Engineering (General Information)
- 304 Departments
- 321 School of Architecture
- 339 School of Industrial Design
- 351 Interdisciplinary Courses

Faculty of Science

- 355 Faculty of Science (General Information)
- 363 Institute of Biochemistry
- 365 Departments and Committees

Interdisciplinary Studies

- 427 Introduction
- 428 African Studies
- 429 Asian Studies
- 430 Integrated Science Studies
- 431 Interdisciplinary Courses and Studies
- 433 Technology, Society, Environment Studies
- 435 Urban Studies
- 436 Women's Studies
- 437 Courses for Non-Majors

Other Information

- 441 Awards and Financial Assistance
- 456 Officers of the University
- 483 Carleton through the Years
- 486 Map of the Campus
- 491 Index
- 496 Annual Calendars, 1980, 1981



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This is Carleton University



Carleton is a university old enough to have an established reputation yet young enough to combine its tradition with innovation in ways to meet the diverse needs of modern students.

Carleton began in 1942 as a non-sectarian part-time college to meet the needs of the many men and women who came to Ottawa to serve the country's war effort. Since that time it has grown and matured and now takes its place proudly as one of Canada's leading, medium-sized universities.

The first "campus" was a few rented classrooms in a high school. Full-time programs were offered for the first time in 1945, and Carleton moved to its own building in downtown Ottawa the following year.

Carleton's continued growth led to another move in 1959 to its present site — a picturesque 152-acre campus, which now has twenty-four buildings, located between the Rideau River and the historic Rideau Canal. The canal, always popular for boating in the summertime, has gained great wintertime fame in recent years as the world's longest skating rink. One end of that rink is at Carleton's front door; the other end, five miles away, is at the National Arts Centre — a short walk from Parliament Hill.

The Parliament Buildings and the Arts Centre are just two of the many community resources available to Carleton's students, thanks largely to the university's location in the nation's capital. Museums, art galleries, libraries, embassies and many government departments, national associations and organizations willingly open their doors. The Ottawa area has cultural and recreational facilities to suit every taste and a large number of information and entertainment programs in both English and French.

More than 14,000 full- and part-time students attend Carleton and study with some 635 full-time faculty members as well as many part-time instructors.

The Faculties of Arts, Science, Social Sciences, Engineering and the School of Computer Science offer programs in architecture, arts, commerce, computer science, engineering, industrial design, journalism, music and science which lead to bachelor's degrees. Certificates in public service studies, teaching English as a second language, law enforcement studies, and English language and composition as well as an undergraduate diploma in music are also available. The Faculty of Graduate Studies and Research offers thirty-two master's degree programs in arts, engineering, journalism, science and social work, and fifteen doctoral degree programs in arts, engineering and science. In public administration there is a graduate diploma.

The academic reputation Carleton has established in these areas is complemented by exciting interdisciplinary programs in Canadian studies, computer science, criminology and corrections, film studies, integrated science studies, international affairs, mass communication, public administration, public policy and management, and Soviet and East European studies. Courses in several disciplines are devoted to women's studies from both historical and current perspectives. Similarly, courses in several disciplines are devoted to African, Asian and urban studies.

Active continuing education programs carry on Carleton's tradition of serving students wishing to study on a part-time basis. These programs are of particular interest to people who wish to further their education during their working lives for personal interest or to pursue degree programs. Free tuition for senior citizens encourages many older persons to work toward degrees or to take courses for the joy of learning.

"Challenge for Credit" allows older students admitted to Carleton to receive credit in some undergraduate courses based on their personal and work experience outside the university.

A wide range of credit and non-credit courses is offered through continuing education and extension programs on campus. In addition, Carleton reaches out to the community by taking courses to the students. Carleton, through its Neighbourhood University program, offers courses in downtown Ottawa, in various locations around the city and in neighbouring towns in the Ottawa Valley. Some courses are now available to Ottawa area residents in their homes through cable television.

The focus of learning, as at any university, centres around its library. The MacOdrum Library houses more than a million volumes and almost half a million other items which include an increasing collection of microfilms, archival material, maps, aerial photographs, slides, government documents and prints. Reading rooms housing books and periodicals of specialized interest are maintained by many departments around the campus.

A broad spectrum of recreational, cultural and leisure-time opportunities is open to members of the Carleton community. The multipurpose University Centre has a coffee house, a pub, games room and an arts and crafts workshop. The athletics complex provides facilities for physical recreation in a wide range of activities from individual fitness programs to intercollegiate team competition in a number of sports. Accommodation for more than 1,300 students is provided in Carleton's five residence buildings. Many individual departments offer lively and varied programs of activities. Special interest clubs, public lectures, concerts, films, live theatre, conferences and conventions bring added depth and new dimensions to life at Carleton.

This is just a glimpse of Carleton University, its programs and facilities. The University welcomes enquiries and encourages potential students, their parents and the general public to visit the campus. The offices listed below will be happy to answer any specific enquiries.

Admission and Application for Undergraduate Programs

The Office of Admissions
Room 407, Administration Building
Carleton University
Ottawa, Ontario K1S 5B6
613-231-3730

Admission and Application for Graduate Programs

Faculty of Graduate Studies and Research
Room 215, Paterson Hall
Carleton University
Ottawa, Ontario K1S 5B6
613-231-4403

Part-Time Studies

Continuing Education
Room 302, Administration Building
Carleton University
Ottawa, Ontario K1S 5B6
613-231-6660

Scholarships, Awards and Bursaries

The Awards Office
Room 202, Administration Building
Carleton University
Ottawa, Ontario K1S 5B6
613-231-3735

General Information on Undergraduate Academic Programs

The High School Liaison Office
Room 204, Administration Building
Carleton University
Ottawa, Ontario K1S 5B6
613-231-2738

The following are some terms frequently used throughout this Calendar, together with a brief explanation of their general meaning. *These definitions do not provide the official, complete definition of the terms as they are applied to the interpretation or administration of University regulations and programs, and must not be so construed.*

Auditing

With the permission of a Department, students may register in courses as auditors. Auditors receive no grade and no credit for courses audited.

Bachelor's Degree

The first university degree, for which a student follows an undergraduate degree program, (e.g. B.A. — Bachelor of Arts).

Bursary

A monetary award based on good academic standing and financial need.

Calendar

A university publication listing courses, degree requirements, faculty and university regulations, and faculty members.

Dean

The academic head of a faculty.

Discipline

The university equivalent of a "subject" in high school.

Faculty

- (a) A major teaching division of the University, divided into departments, schools and, in some cases, committees, and headed by a dean. (e.g. Faculty of Arts).
- (b) The academic teaching staff of the University.

Honours Degree Program

A specialized university program, normally four years or 20 full-course credits or their equivalent in length to achieve the degree.

Humanities

Disciplines offered within the Faculty of Arts such as literature, philosophy, languages.

Major

A discipline in which a student specializes.

Major Degree

A university program, normally three years or 15 full-course credits or their equivalent in length to achieve the degree.

Mature Matriculant

A person who lacks normal entrance requirements as published in the Calendar, but who is 21 years of age or over by December 31 of the year in which he or she wishes to enrol, may receive consideration for admission to a degree program either on a full-time or part-time basis.

Ombudsman

A person who deals with individuals' grievances, complaints, requests for information.

Part-Time Student

A student formally admitted to an undergraduate degree program who (a) for the Faculties of Arts, Social Sciences or Science, is taking a maximum of two full-course credits or their equivalent during any academic session; or (b) for the Faculty of Engineering, is taking a program which has the approval of the Faculty.

Prerequisite(s)

A course or courses that must be completed before the student can enter the course described. In most cases, for example, the student must have taken a First-year course in a particular discipline before being admitted to a course in the same discipline at the Second- or Third-year level. The First-year course is, therefore, a prerequisite.

Program

A combination of courses over a specific area or discipline which fulfills requirements for a degree.

Registration

The process of selecting and enrolling in courses for an academic session.

Scholarship

A monetary award based on academic achievement.

Social Sciences

Disciplines offered within the Faculty of Social Sciences such as economics, political science, psychology.

Special Student

A student not admitted to a degree program but taking degree credit courses to qualify for admission, to improve professional or vocational qualifications, for transfer credit, or for personal interest.

Tuition Fees

Fees paid for enrolment in courses.

Undergraduate Student

A university student working towards a bachelor's degree.

Withdrawal

The formal procedure, according to regulations laid down by the University, of withdrawing from a course or courses, or from the University (see pp. 41 and 47).

The Academic Year

Undergraduate Studies

The following schedule contains the dates prescribed by the University Senate for academic activities and for procedures of academic administration.

The academic year is divided into two sessions.

Winter Session

The Winter session commences in September and continues until the end of the examination period in early May. The *First term* of the Winter session consists of the months September to December. The *Second term* consists of the months January to May. Courses are offered during the Day and the Evening.

Summer Session

The Summer session commences in May and continues until the end of the examination period in August. The *Evening division* begins in May and continues until August while the *Day division* begins in July and continues until August. Courses offered in the first or second halves of these periods are designated First or Second term courses respectively.

Winter Session 1980-81

April 1

Last day for receipt of applications for admission to a program from candidates whose documents originate outside Canada or the United States

July 2

Last day for receipt of applications for admission to a program from mature matriculants, from those presenting post-secondary education qualifications, and from those transferring from other universities in Canada or the United States

August 1

Last day to apply for internal degree transfers to allow for September registration without incurring a late registration fee

August 15

Last day for receipt of applications for admission to a program from Special students applying solely on the basis of Carleton University studies

September

General Faculty Board meets, date to be announced

September 1

Statutory holiday, University closed

September 2

Last day for receipt of applications for admission to a program from applicants with high school qualifications

from Canada and the United States

Last day for receiving applications for degrees from potential Fall graduates

Last day for application for degree program transfers for First term of Winter session

September 2-5

Registration for Winter session, to be scheduled as announced

September 8

First term classes begin

September 19

Last day for late registration and course changes for full courses and First-term half courses

September 30

Last day for applications for Summer session supplemental examinations

October 13

Statutory holiday, University closed

October 18

Summer session supplemental, deferred final and grade-raising examinations end

November 9

Fall convocation for the conferring of degrees

November 14

Last day for withdrawal from First-term half courses

December 1

Last day for receiving applications for degrees from potential Winter (February) graduates
Last day for application for January admission to a degree program

December 5

Last day of First-term classes

Last day for handing in term assignments, subject to any earlier course deadline

December 8-20

Final examinations in half courses and mid-term examinations in full courses may be scheduled as announced

January 5, 1981

Second term classes begin

Last day for application for degree program transfers for Second term of Winter session

Last day for receipt of First-term half-course grade reports by faculty registrars, subject to any earlier deadline

January

Registration for Winter session Second-term courses, dates to be announced

January 16

Last day for late registration and course changes for Second-term half courses

January 31

Last day for applications for supplemental, deferred final and grade-raising examinations in First-term half-course finals

February 1

Last day for receiving applications for degrees from potential Spring graduates

February 20

Last day for withdrawal from full courses

February 23-27

Study period

February 28

First-term half-course supplemental, deferred final and grade-raising examinations end

March 20

Last day for withdrawal from Second-term half courses

April 10

Last day of classes for Winter session full courses and Second-term half courses

April 15

Last day for handing in term assignments, subject to any earlier course deadline

April 15-May 2

Final examinations may be scheduled as announced

April 17

Statutory holiday, University closed

May 8

Last day for receipt of grade reports by faculty registrars, subject to any earlier deadline

June

Spring convocation for conferring of degrees, date to be announced

June 1

Last day for submission of change of grade reports

June 30

Last day for applications for supplemental, deferred final and grade-raising examinations

August 4-12

Supplemental, deferred final and grade-raising examinations may be scheduled as announced

Summer Session 1981

March 1

Last day for receipt of applications for admission consideration to the Summer session

April 1

Last day by which internal degree program transfers can be submitted to guarantee transfer consideration for the Summer session

May

Registration for Summer Day and Evening divisions, dates to be announced

May 18

Statutory holiday, University closed

Classes missed will meet May 22

May 19

Summer Evening full course and First term half course classes begin

Last day for application for degree program transfers effective for Summer session

May 26

Last day for late registration and course changes for First term Evening division half courses

Last day for late registration and course changes for Evening division full courses

June 16

Last day for withdrawal from First term Evening division half courses

June 25

Last day for First term Evening division. (Note: Full term Evening division courses resume July 2)

June 26, 27

First term Evening division half course final examinations may be scheduled as announced

July

Registration for Summer Day division, dates to be announced

July 1

Statutory holiday, University closed

July 2

Summer session Day and Second term Evening classes begin

July 8

Last day for late registration and course changes for Second term Evening division half courses

Last day for late registration and course changes for First term Day division half courses

Last day for late registration and course changes for Day division full courses

July 15

Last day for withdrawal from First term Day division half courses

July 21

Last day for withdrawal from Evening division full courses

July 22

Last day for First term Day division classes

July 23

Second term Day division half courses begin

July 24

Last day for late registration and course changes for Second term Day division half courses

July 25

First term Day division half course final examinations may be scheduled as announced

July 31

Last day for withdrawal from Day division full courses
Last day for withdrawal from Second term Evening division half courses

August 3

Civic holiday, University closed
Evening classes missed will meet August 7

August 6

Last day for withdrawal from Second term Day division half courses

August 12

Last day for Summer session classes

August 13-15

Summer session examinations

August 21

Last day for receipt of Summer session final grade reports by faculty registrars, subject to any earlier deadline

September 30

Last day for applications for Summer session supplemental, deferred final and grade-raising examinations

October 17

Summer session supplemental, deferred final and grade-raising examinations will be held

Accreditation

Carleton University, a founding member of the Council of Ontario Universities, enjoys full accreditation by the Ministry of Colleges and Universities of the Province of Ontario. It is a Charter member of the Association of Universities and Colleges of Canada as well as a member of the Association of Commonwealth Universities and of the International Association of Universities.

The Organization of the University

Carleton University has Faculties of Arts, Social Sciences, Engineering, Science, and Graduate Studies and Research. In addition there are Schools of Computer Science and Continuing Education. The School of Journalism is associated with the Faculty of Arts. The School of Commerce, the School of Public Administration and the Institute of Soviet and East European Studies are associated with the Faculty of Social Sciences. The Institute of Biochemistry is associated with the Faculty of Science. The Faculty of Engineering includes the School of Architecture and the School of Industrial Design.

The Faculty of Graduate Studies and Research includes the Institute of Canadian Studies, the Norman Paterson School of International Affairs, the Paterson Centre for International Programs, and the School of Social Work.

The University offers programs of undergraduate study leading to bachelor's degrees in Arts, Journalism, Commerce, Music, Science, Computer Science, Engineering, Architecture and Industrial Design; and to a Certificate in Public Service Studies, a Certificate in Teaching English as a Second Language, a Certificate in English Language and Composition, a Certificate in Law Enforcement Studies and a Diploma in Music. The University's Faculty of Graduate Studies and Research offers programs leading to degrees in Master of Arts, Master of Journalism, Master of Science, Master of Engineering, Master of Social Work, and Doctor of Philosophy studies in certain fields. It also offers a program leading to a Graduate Diploma in Public Administration.

Purpose of the Calendar

The undergraduate Calendar outlines requirements for admission, information concerning registration, course load, changes and withdrawals, and examinations. Regulations governing promotion and academic standing are included in the sections of the Calendar dealing with each Faculty and School. A separate calendar is published by the Faculty of Graduate Studies and Research.

How to Use the Calendar

All students should familiarize themselves with the contents of this Calendar and make themselves aware of regulations that apply to them, as prescribed by the University as a whole, by individual faculties, by schools and by departments. The following sections of the Calendar are most important in this regard:

1. **General Regulations:** Regulations applicable to students in all faculties and to Special Students (p. 27.)
2. **Faculty Sections:** There are sections for each undergraduate faculty: **(a)** Arts and Social Sciences (pp. 73-94), **(b)** Engineering (p. 289), **(c)** Science (p. 355). Information on general regulations for each faculty is provided first, and students should make themselves familiar with regulations governing the faculty (and school or institute where applicable) in which they are or will be registered.
3. Following the information on the Schools of Computer Science and Continuing Education, and the general faculty information are the departments of the University, arranged in alphabetical order within the faculty of which they are a member. Students should make themselves familiar with the regulations of every department in which they plan to take courses, including those of faculties other than the one in which they are registered.
4. Interdisciplinary courses are offered for students in all faculties. This section includes courses in African Studies, Asian Studies, Integrated Science Studies, Interdisciplinary courses, Technology, Society, Environment Studies, Urban Studies, Women's Studies; and a list of courses offered by the various departments which are offered mainly for students registered in other departments ("Courses for Non-Majors").

Please consult the index at the back of the book for guidance in finding detailed information and regulations.

Administration of Regulations

Students are responsible for ensuring that the courses in which they register conform to the requirements of their academic program. The regulations published in this Calendar include the main legislation governing admission and standing for undergraduate study as approved by the Senate. Advice on more specific rules or interpretations that may affect a student's registration is available from Departmental and Faculty Registrar's Offices.

Students have the right to appeal the application of a regulation, and should enquire about procedures at their Faculty Registrar's Office.

Registrarial Services

Registrarial services are available to students through the following offices:

New Applicants and Prospective Students

The Admissions Office
Room 407, Administration Building
Telephone 613-231-3730

Current Undergraduate Degree, Certificate and Diploma Students

*Faculty of Arts and Faculty of Social Sciences
(including Commerce, Journalism, Music and Public Administration)*
Room 312, Paterson Hall
Telephone 231-6690

*Faculty of Engineering
(including Architecture and Industrial Design)*
Room 353, Mackenzie Building
Telephone 231-4313

Faculty of Science
Room 212, Herzberg Laboratories
Telephone 231-6705

Special Students and Students Enrolled in Non-Credit Courses

Continuing Education
Room 302, Administration Building
Telephone 231-6660

Classification of Students

For purposes of studying at Carleton University and for the administering of regulations governing these studies, the following student classifications are recognized.

Full-Time Undergraduate Student

A student who has been formally admitted to an undergraduate program and who:

1. For the Faculties of Arts, Social Sciences, and Science, and the School of Computer Science, is taking a minimum of four full courses or the equivalent during the Winter session;
2. For the Faculty of Engineering, the School of Architecture and the School of Industrial Design, is following the course load as shown for each year in those programs.

Part-Time Undergraduate Student

A student who has been formally admitted to an undergraduate program and who:

1. For the Faculties of Arts, Social Sciences, and Science, and the School of Computer Science, is taking a maximum of two full courses or the equivalent during any academic session;
2. For the Faculty of Engineering, is taking a program which has the approval of the Faculty.

Special Student

A student who is registered in a degree-credit course or courses but who has not been formally admitted to an undergraduate program.

Extension Student

A student who is registered in a "non-credit" course offered by the Extension Division, Continuing Education.

Off-Campus Courses

Each year Carleton University offers a number of undergraduate degree-credit courses at locations away from the University campus. At the present time courses are given in down-town Ottawa in the University at Noon program, in east- and west-end Ottawa, and out of town in Arnprior, Bells Corners, Carleton Place, Kanata, Manotick and Smiths Falls. For further information contact Continuing Education, Room 302, Administration Building, telephone 231-6660.

Senior Citizens: Tuition Fees

All persons sixty years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee.

Other Calendars

Graduate Studies and Research Calendar

Available from:
Dean of Graduate Studies and Research
Room 215, Paterson Hall
Carleton University
Ottawa, Canada K1S 5B6

Summer Session Calendar

Available from:
Continuing Education
Room 302, Administration Building
Carleton University
Ottawa, Canada K1S 5B6

Notes

1. Half-credit courses are marked with the symbol*.
2. When the number of an individual course is changed from one year to the next, the former (old) number is noted, for one year only, in brackets next to the new number.

Departmental Numbering

Each course number is prefixed by the number or numbers of the Department, School or committee under whose auspices the course is offered. Academic departments are listed under the appropriate Faculty.

- 04 Interdisciplinary Arts and Social Sciences
- 10 Interdisciplinary Humanities
- 11 Art History
- 12 Canadian Studies
- 13 Classical Civilization
- 14 Classics
- 15 Greek
- 16 Latin
- 17 Comparative Literature
- 18 English
- 19 Film Studies
- 20 French
- 21 English as a Second Language
- 22 German
- 24 History
- 26 Italian
- 27 Mass Communication
- 28 Journalism
- 29 Linguistics
- 30 Music
- 32 Philosophy
- 34 Religion
- 36 Russian
- 38 Spanish
- 41 Accounting
- 42 Management Studies
- 43 Economics
- 45 Geography
- 46 International Affairs
- 47 Political Science
- 49 Psychology
- 50 Public Administration
- 51 Law
- 52 School of Social Work
- 53 Sociology
- 54 Anthropology
- 55 Soviet and East European Studies
- 56 Sociology-Anthropology
- 59 Multidisciplinary Technology, Society, Environment
- 60 Interdisciplinary Sciences
- 61 Biology
- 63 Biochemistry
- 65 Chemistry
- 67 Geology
- 69 Mathematics (Majors)

- 70 Mathematics (Honours)
- 75 Physics
- 76 Architecture Division A
- 77 Architecture Division B
- 78 Architecture Division C
- 79 Architecture Division D
- 80 Architecture Design
- 82 Civil Engineering
- 85 Industrial Design
- 88 Mechanical and Aeronautical Engineering
- 94 Systems Engineering and Computing Science
- 95 Computer Science
- 97 Electronics
- 99 Engineering Projects

Course Numbering

The course numbering pattern is, in general, as follows:

001-099

Courses usually taken in Qualifying University year

100-199

Courses usually taken in First year

200-299

Courses usually taken in Second year

300-399

Courses usually taken in Third year

400-499

Courses ordinarily taken in Fourth-year Engineering, Fourth- and Fifth-years Architecture, and Fourth-year (Honours) Arts, Social Sciences and Science

500-599

Courses ordinarily taken by Graduate students

Graduate Studies and Research

Programs of graduate study, first offered at Carleton in 1954, provide opportunities for advanced study, research and critical scholarship in a number of disciplines. Carleton's libraries, laboratories, and other research facilities enable graduate students to perform scholarly work of consistently high calibre, and help to foster a spirit of independent investigation.

The location of the University in Ottawa also enables graduate students to take advantage of the research facilities connected with many national institutions and government departments. In addition, through the program of Inter-University Co-operation in Graduate Instruction, full-time graduate students may take some approved credit courses at the University of Ottawa.

Graduate programs currently offered at Carleton are the following:

Graduate Diploma in Public Administration (D.P.A.)

Master of Arts (M.A.)

In Anthropology, Canadian Studies, Classics, Comparative Literature, Economics, English, French, Geography, German, History, International Affairs, Philosophy, Political Science, Psychology, Public Administration, Religion, Spanish, Sociology, and Soviet and East European Studies.

Master of Engineering (M.Eng.)

In Aeronautical, Civil, Electrical, Materials and Mechanical Engineering.

Master of Journalism (M.J.)

Master of Science (M.Sc.)

In Biology, Chemistry, Geology, Information and Systems Science, Mathematics and Physics.

Master of Social Work (M.S.W.)

Doctor of Philosophy (Ph.D.)

In Biology, Canadian Literature, Chemistry, Economics, Engineering (Aeronautical, Civil, Electrical and Mechanical), Geology, History, Mathematics, Physics, Political Science, Psychology, and Sociology.

Research

Graduate studies and research are closely intertwined at Carleton, as in the case of the Institute of Canadian Studies, the Institute of Soviet and East European Studies, and the Paterson Centre, which provides a focal point for research units in several fields.

Of a less formal nature are the many organized research units in the fields of architecture, emergency communications, energy, entomology, program evaluation, jurisprudence, regional linguistics, northern and native studies, renaissance studies, social welfare studies and multi-disciplinary studies in communications.

In addition, many interesting research projects are thriving, which are outlined in the biennial publication *Research and Studies*, available from the Information Office, Carleton University, Ottawa, Canada K1S 5B6.

Special Students

Students interested in pursuing graduate studies at Carleton are urged to note the following University regulation: "Course work completed as a Special student is not normally acceptable for degree credit in the Faculty of Graduate Studies and Research."

Graduate Studies and Research Calendar

The studies of each candidate will be directed by a department, institute, or school, and are governed by the general regulations outlined in the Graduate Studies and Research Calendar. To obtain a copy of this calendar, write to:

The Faculty of Graduate Studies and Research
Carleton University
Ottawa, Canada K1S 5B6

Directory of Academic Offices

Accounting: see Commerce
Aeronautical Engineering: see Mechanical and Aeronautical Engineering
African Studies: B459 Loeb Building, 231-4396
Anthropology: see Sociology and Anthropology
Architecture: 202 School of Architecture, 231-6380
Art History: 2201 Arts Tower, 231-7156
Asian Studies: 2213 Arts Tower, 231-3863
Biochemistry: 585 Tory Building, 231-4458
Biology: 583 Tory Building, 231-3871
Canadian Studies: 1109 Arts Tower, 231-4473
Chemistry: 204 Steacie Building, 231-4332
Civil Engineering: see Engineering
Classics: 2015 Arts Tower, 231-3740
Commerce: 928 Arts Tower, 231-4373
Comparative Literature: 1519 Arts Tower, 231-4494
Computer Science: 377 Mackenzie Building, 231-6730
Criminology and Corrections: D794 Loeb Building, 231-6650
Directed Interdisciplinary Studies: 1719 Arts Tower, 231-7594
Economics: C876 Loeb Building, 231-4377
Electronics: see Engineering
Engineering: 353 Mackenzie Building, 231-4313
English Language and Literature: 1812 Arts Tower, 231-3839
English as a Second Language: 235 Paterson Hall, 231-5657
Film Studies: 427 St. Patrick's College Building, 231-6755
French: 1604 Arts Tower, 231-3754
Geography: B340 Loeb Building, 231-2641
Geology: 304 Tory Building, 231-2630
German: 1315 Arts Tower, 231-2605
History: 400 Paterson Hall, 231-2777
Industrial Design: 291 Mackenzie Building, 231-5526
Integrated Science Studies: 224 Herzberg Laboratories, 231-6738
Interdisciplinary Studies (Directed): 1719 Arts Tower, 231-7594
International Affairs: 2A55 Paterson Hall, 231-2693
Italian: 1427 Arts Tower, 231-4481
Journalism: 346 St. Patrick's College Building, 231-5530
Law: D586 Loeb Building, 231-7540
Law Enforcement Studies: D794 Loeb Building, 231-6650
Linguistics: 247 Paterson Hall, 231-5573
Management Studies: see Commerce
Mass Communication: 346 St. Patrick's College Building, 231-5530
Mathematics: 716 Arts Tower, 231-5500
Mechanical and Aeronautical Engineering: see Engineering
Music: A911 Loeb Building, 231-3633
Philosophy: 2125 Arts Tower, 231-3868
Physics: 312 Herzberg Laboratories, 231-4346
Political Science: B640 Loeb Building, 231-2697
Psychology: B552 Loeb Building, 231-3636

Public Administration: 1001 Arts Tower, 231-6360
Religion: 2116 Arts Tower, 231-3863
Russian: 1301 Arts Tower, 231-4488
Social Work: 469 St. Patrick's College Building, 231-3677
Sociology and Anthropology: B750 Loeb Building, 231-6650
Soviet and East European Studies: 257 Paterson Hall, 231-2711
Spanish: 1419 Arts Tower, 231-4465
Systems Engineering and Computing Science: see Engineering
Technology, Society, Environment Studies: 508 Steacie Building, 231-4334
Urban Studies: B350 Loeb Building, 231-3616
Women's Studies: D791 Loeb Building, 231-7452

Hours of Operation

Registrar's Office: Faculty of Arts (including School of Journalism)

Monday to Friday 8:30 a.m.-12 noon; 1-5 p.m.

Registrar's Office: Faculty of Engineering (including Architecture and Industrial Design)

Labour Day to May 31

Monday to Friday 9 a.m.-12 noon; 1:15-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-12 noon; 1:15-4:30 p.m.

Registrar's Office: Faculty of Science

Labour Day to May 31

Monday to Friday 8:30 a.m.-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-4:30 p.m.

Registrar's Office: Faculty of Social Sciences (including Commerce and Public Administration)

Monday to Friday 8:30 a.m.-12 noon; 1-5 p.m.

Office of Admissions

Labour Day to May 31

Monday to Friday 8:30 a.m.-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-4:30 p.m. Counter service until 3 p.m. only

Continuing Education

Labour Day to May 31

Monday to Friday 9 a.m.-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-4:30 p.m.

Evening Service, Continuing Education and Degree Programs

Monday to Thursday 6:30-8:30 p.m.

Winter term, January

Monday to Friday 9 a.m.-5 p.m.

Students registered in degree programs may receive evening counter service (general information and forms) from the Continuing Education offices.

Business Office

Monday to Friday 9 a.m.-4 p.m.

Evening Service, Business Office

Monday to Thursday 5-7 p.m.

Library

Summer Evening Session

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-5 p.m.

Sunday 1-8 p.m.

Summer Day Session

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-10 p.m.

Sunday 1-10 p.m.

Winter Session

Monday to Thursday 8:30 a.m.-11 p.m.

Friday 8:30 a.m.-6 p.m.

Saturday 10 a.m.-10 p.m.

Sunday 12 noon-10 p.m.

Weekend study hours are extended before examinations. When classes are not in session, hours are reduced. The Library closes for all statutory and civic holidays except Easter Monday.

Bookstore

Monday to Thursday 9 a.m.-9 p.m.

Friday 9 a.m.-4:30 p.m.

Subject to seasonal adjustments

Student Services

Labour Day to May 31

Monday to Friday 9 a.m.-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-4:30 p.m.

Counselling

Labour Day to May 31

Monday to Friday 9 a.m.-12 noon; 1-5 p.m.

June to Labour Day

Monday to Friday 8:30 a.m.-12 noon; 1-4:30 p.m.

Health Services (Unicentre)

Monday to Friday 9 a.m.-5 p.m.

After-Hours Health Service (Level 2, Glengarry House)

September to May

5 p.m.-9 a.m. Monday — Friday

24 hours a day on weekends

Office Locations

Admissions

Room 407, Administration (231-3730)

Alumni Association

Room 510, Administration (231-3833)

Athletics and Recreation

Room 201, Physical Recreation Centre (231-2646)

Awards Office

Room 202, Administration (231-3735)

Bookstore

Room 403, Southam Hall (231-6616)

Business Office

Room 301, Administration (231-3762)

Canada Employment Centre, Carleton University

Room 508, University Centre (231-2600)

Continuing Education

Room 302, Administration (231-6660)

Counselling

Room 1201, Arts Tower (231-4408)

Dean of Student Services

Room 501, University Centre (231-3723)

Development Office

Room 510, Administration (231-4430)

General Information Desk

Administration (231-4321)

Health Services

Level 6, University Centre (231-2755)

High School Liaison Office

Room 204, Administration (231-2738)

Information Carleton

Level 4, University Centre (231-7177)

Information Office

Room 605, Administration (231-3600)

Medical Clinics

Level 6, University Centre (231-2755)

Level 2, Glengarry House (231-3844)

Overseas Students' Advisory Service

Room 1201, Arts Tower, (231-3724)

Registrar's Office, Faculties of Arts and Social Sciences

Room 312 Paterson Hall (231-6690), General Office

Room 322 Paterson Hall (231-7407), Counselling Office

Registrar's Office, Faculty of Engineering (including Architecture and Industrial Design)

Room 353, Mackenzie (231-4313)

Registrar's Office, Faculty of Science

Room 212, Herzberg Physics Laboratories (231-6705)

Residence Information and Food Services

Rooms 223/225, University Commons (231-3610)

Students' Association

Room 401, University Centre (231-4380)

Student Services

Office of the Dean of Student Services

Dean Norman D. Fenn
Room 501, University Centre
Telephone 231-3723

The Office of the Dean of Student Services can be a valuable source for a student who is seeking information pertaining to almost any aspect of student life on campus. The office exists to ascertain the needs of the student community and where needs become apparent to provide the appropriate services.

The Dean's office is involved in programming of such a nature as to facilitate interaction among the various constituents of the university. Members of the Dean's office are available in an advisory capacity which includes an Advisory Service for overseas students.

The Office has the overall administrative responsibility for the following departments:

Counselling Services;
Health Services;
Residence Life.

Athletics and Recreation

Physical Recreation Centre
Telephone 231-2646

The physical recreation program has been designed to meet three general areas of interest: intercollegiate athletics, intramurals, and recreational skill instruction. Although many university students enjoy the challenge and excitement of intercollegiate athletics, others frequently prefer a less demanding level of competition in Carleton's intramural program, while yet another segment of the university community desires physical expression almost completely devoid of all competition.

To meet these needs, skill-instruction classes are offered in squash, dance, yoga, fitness, jiu-jitsu, karate and swimming.

The intramural program includes touch football, cross-country running, basketball, broomball, volleyball, badminton, swimming, curling and hockey. A few of these activities are co-educational.

Carleton's Varsity teams for men (The Ravens) participate in basketball, football, waterpolo, cross-country skiing and fencing. The University is a member of the Ontario Universities Athletic Association.

The women's Varsity teams (The Robins) are members of the Ontario Women's Intercollegiate Athletic Association and participate in basketball, volleyball, cross-country skiing and fencing.

The University's present outdoor athletic facilities include football and soccer fields as well as a hockey and skating rink. The indoor facilities consist of a fifty-metre pool and ten-metre diving platform; a fitness

centre with jogging track, weight training and fitness testing equipment; and a large double gymnasium with four squash courts and a combatives room. The facilities are made available to students either for recreational needs or for organized competition.

The athletic program at Carleton is governed by an Athletic Board comprised of members from the Faculty, Administration and the Students' Association.

Awards Office

Room 202, Administration Building
Telephone 231-3735

Medals are the major academic awards granted by the University to its superior graduating scholars. They have no monetary value.

The Awards Office is responsible for the administration of undergraduate scholarship and bursary programs as well as loans for graduate and undergraduate students.

Scholarships are awarded on entry to the University and to those in course on the basis of superior academic performance. Applications are not required.

Awards and prizes are awarded for excellence in particular areas of study. They may be cash awards or book prizes. No applications are required.

Bursaries are awarded to students who can show genuine evidence of financial need and who have satisfactory academic standing. Students who are residents of the province of Ontario or the province of Quebec are expected first to apply for provincial assistance. (See below.)

Financial Aid for Students

Administration of Awards

1. Students receiving scholarships and bursaries exceeding in total \$200 and which are under the jurisdiction of the University will ordinarily be paid in two instalments, one in October and one in January. The University reserves the right to withhold the payment of the second instalment in cases where students do not meet the conditions of the award. Awards of \$200 or less will ordinarily be paid in one instalment, in October.

2. Scholarship and bursary recipients who withdraw before the completion of their year will be expected to refund their bursaries or scholarships (or a portion thereof).

Government Aid Programs

Ontario Residents

Canadian citizens or landed immigrants who are residents of Ontario may qualify for assistance from the Ontario Student Assistance Program. The financial aid scheme is designed to supplement, rather than

replace, family and/or student resources. In order to determine the additional funds required, the province objectively assesses the resources of the family and/or the student which could reasonably be used to provide for the student's educational costs. The assistance is in the form of an Ontario Study Grant, a Canada Student Loan and/or Ontario Student Loan. The maximum loan/grant award a student can receive in one academic year is the total amount of his or her allowable educational costs. The average Ontario Student Assistance issued through Carleton University in 1979-80 was \$2,250. Application forms and further information can be obtained by contacting the Awards Office or the Student Awards Branch of the Ministry of Colleges and Universities, Mowat Block, Queen's Park, Toronto, M7A 2B4.

Students wishing to have applications processed in time for Fall registration, must ensure that completed forms are submitted to the Awards Office by *July 1*.

Part-Time Students

Students enrolled in fewer than four full courses are classified as part-time for the purposes of federal/provincial financial aid schemes. These students are advised to contact the Awards Office for information on the availability of financial aid for part-time study.

Residents of Other Provinces/Territories

Canadian citizens or landed immigrants from the territories and all other provinces except Quebec may qualify for assistance from the *Canada Student Loans Plan* through their home province. The maximum loan available per academic year is currently \$1,800, although this is under review. The loan is interest free while the student is enrolled full-time and for six months thereafter. Some provinces also make available non-repayable grant assistance along with this federal loan.

The Awards Office disburses general information on the various provincial aid schemes but application forms and details on individual programs must be obtained from the authorities in the home province. Deadline dates vary but generally speaking, it is wise to apply for financial assistance through the appropriate provincial department before *July 15*.

Quebec Aid

Applications from students for aid assistance from the province of Quebec should be made directly to the Awards Office. Deadline date for submission of applications is *September 30*. In order to be accepted by the Department of Education, all applications must be officially stamped by the Awards Officer.

Bursaries

Bursaries administered by Carleton University are awarded to students who have a sound academic standing and who show evidence of genuine financial need.

One application only, available in the Awards Office, is required for bursaries which are administered by Carleton.

For details of medals, scholarships, prizes, bursaries and loans see pp. 441-455.

Placement and Career Counselling: Canada Employment Centre

Room 508, University Centre
Telephone 231-2600 or 996-9590

The Placement and Career Counselling Service is provided by Employment and Immigration Canada through the establishment of an on-campus Canada Employment Centre (CEC). The purpose of the service is two-fold.

1. To provide students with readily available access to employment opportunities. To this end the Centre maintains job-boards listing part-time, summer and permanent employment opportunities. In addition, each year the Centre arranges for a large number of representatives from government, business and industry, both local and national, to recruit at Carleton. While the majority of these visits are for the purpose of recruiting for permanent employment, a number are arranged for undergraduates seeking summer employment. Students interested in participating in this program are advised to contact the Centre upon returning to classes in the Fall, because recruiting visits commence early in October.

2. To provide students with information about and assistance in preparing for entry into the labour market. Individual and group counselling, covering such topics as career areas, labour-market trends, the job hunt and résumé preparation, is available to students seeking or preparing for employment. Students can supplement the counselling provided by reviewing materials maintained in the Centre's library, as well as by contacting Counselling Services, located in Room 1201, Arts Tower.

All Placement and Career Counselling information may be obtained by contacting the Centre or referring to the *CEC Weekly Bulletin* posted throughout the University. The University papers and radio station are additional sources of information from the Centre.

Student Housing and Food Services

Residences

Telephone 231-6395

Five residences are located on the campus close to the classrooms, library and other University facilities. The underground tunnel system makes travel to all parts of the campus easy and convenient for the physically

handicapped. Each residence building is provided with T.V. lounges, study areas and laundry facilities. Students' rooms are equipped to meet the basic needs of students.

Full-time students of the University are eligible to live in residence, with non-residents of Ottawa being given preference. The residence contract covers the period from September through the Spring examinations except for a short period at Christmas when the facilities are closed.

All residents must participate in the residence meal plan.

To receive a residence application form, students new to Carleton should indicate on the University application that residence is desired. Subsequent residence information will be sent from the Office of Admissions. Residence applications are sent to students concurrently with the offer of admissions to full-time study at Carleton. For further details about residence services or procedures, students should contact the Student Housing and Food Services Office. Students who are currently registered at Carleton need only visit the Students Housing Office to obtain an application for residence.

Off-Campus Housing

Telephone 231-3612

The Off-Campus Housing Section is set up to assist students unable to obtain or not interested in on-campus residence accommodation. Listings range from rooms to private houses, giving the rates and amenities provided. This service has been set up to aid out-of-town people, but it is in no way a rental agency. Listings (not available for distribution) are posted in a glass-enclosed case in the foyer outside room 223 of the Commons building, and are available 24 hours a day, seven days a week. The University does not undertake to inspect or approve any of the facilities which are listed by the Off-Campus Housing Section.

In addition a service called "Faculty and Staff Listing" is maintained. This lists houses of staff members going on sabbatical leave for periods ranging from six months to two years. The list is available on request.

Food Services

Telephone 231-6395

A variety of food service plans and facilities are available to non-residence students, staff and faculty at Carleton. In addition, full catering services are available to provide banquets for 500-800, or a birthday cake for a friend.

Use of the residence dining halls with the program of unlimited servings, Saturday night steak and monthly specials, is available to students, staff and faculty. A number of food plans are available through the Department of Housing and Food Services. These range from 14 meals per week to cash at the door.

The Loeb Building and University Centre also have Cafeteria service available. In addition, many buildings on campus are serviced by vending machines for full lunches or just a beverage.

Conference Services

Telephone 231-5510

During the summer months, residences are used in a dual capacity for summer and transient students and for conference delegates. Full conference requirements (room, food services, special catering, meeting rooms, etc.) are handled by this section. Rates and details will be sent out on request.

The arrangement of special functions such as wedding receptions, banquets, parties (large and small) and special meetings come within the scope of this section.

Health Services

Health Services is provided to protect and improve the physical and mental health of the students and of the University community. Responsibilities are to provide consultation, treatment and advice on matters of health, and to ascertain the fitness of students to perform academic work. When the necessary service cannot be provided by the program, appropriate referrals will be made. Confidentiality is respected at all times.

Health Services has regular hours and is staffed by physicians, nurses and psychiatrists.

The main clinic is on level 6 of the University Centre, open from 9 a.m. to 5 p.m. Monday to Friday. For an appointment call 231-2755.

If you become ill when the Health Services Clinic is closed, you may contact the "After Hours Service" located in Room 226, Glengarry House. A nurse is in attendance from 5 p.m. to 9 a.m. Monday to Friday and 24 hours/day on weekends from September to May. Doctors are on call for those persons (resident and non-resident) requiring immediate attention during these hours. Beds are available for persons who require observation for a few hours or over night.

Psychiatrists are in attendance for those requiring psychiatric assessment or care. The services provided by these facilities are available to all students of the University.

Medical excuses will not be issued to students by Health Services for examinations and term papers missed because of illness. If confirmation of the illness is required, the instructor may contact the treating physician. A medical certificate does not constitute an appeal. Requests for deferral, etc. should be made to the appropriate Faculty Registrar's Office.

University Counselling Services

The University Counselling Services is an educational resource centre available to all members of the university community. It provides a variety of learning experiences to facilitate personal growth and adjustment, maximum development of individual potential and the realization of personal, academic and career goals. To this end, a qualified team of counselling professionals offers a wide range of services and programs.

All contacts with the University Counselling Services are voluntary and strictly confidential. Information is only released upon the request and consent of the client involved. Other types of assistance include appropriate on and off-campus referrals when required and consultation regarding the problems of another person.

The Centre is located in Room 1201, Arts Tower, with office hours from 9 a.m. to noon and from 1 to 5 p.m. For further information about services and programs, contact the Centre in person or call 231-4408.

Counselling Services

Personal counselling affords the opportunity of learning to deal more effectively with emotional and social problems. Educational and career counselling involves learning to plan wisely, handle difficulties, and make decisions with regard to academic and vocational concerns. Individual and group approaches are used in providing counselling and therapy.

Testing Service

A testing program is designed in consultation with a counsellor and constitutes an individual assessment according to the type of self-knowledge required. Relevant information generated by interest, personality, and ability test results is used in helping to determine goals and make choices.

Information Service

A resource centre is maintained for use in educational and vocational planning. It includes materials on occupations, university and community college calendars, directories and other types of career literature. Information about other sources of assistance at Carleton and in the greater Ottawa community is also available.

Learning Assistance Service

Group programs or individual counselling is available to students who want to develop better study strategies. Some of the areas where help is available are textbook reading, note-taking, concentration and time management problems, seminar presentations, essay writing and studying for exams.

Group Programs

These programs afford opportunities to be involved in a variety of experiences in which learning is best facilitated through group participation. They are offered periodically throughout the year. The nature and content of programs are publicized along with dates and registration details.

Foreign Student Advisory Service

Telephone 231-3724

Students from other countries can discuss any concerns pertaining to their particular situation with the staff at the University Counselling Services. Information concerning university education, financial assistance, health coverage, immigration regulations and the general adjustment to a new living situation is available through the service. The advisory service is also a good place for students to make contacts with other foreign students.

A reception service is provided for newly arriving foreign students from the last week of August to the second week of September.

Facilities for Handicapped Students

The campus of Carleton University is one of the best equipped in Canada for accommodating physically handicapped persons. The buildings are in close proximity to each other and are connected by tunnels. All of the main buildings have elevators and are ramped for outside entrance and egress; most have washrooms equipped for the handicapped.

A guide to the University for the handicapped has been prepared by a club concerned with the problems of the handicapped. Copies are available through the office of the Dean of Student Services.

Bookstore

The University Bookstore, located in Southam Hall, stocks all required textbooks and offers a wide variety of reference and general books. A complete line of school supplies, imprinted software and gifts are also available.

Bookstore hours are (from Labour Day to May):
Monday through Thursday, 9:00 a.m. to 9:00 p.m.
Friday 9:00 a.m. to 4:30 p.m.

Extended and summer hours are posted at the Bookstore entrance.

The Bookstore has a limited refund and exchange policy at the opening of each term and students are urged to review the policy posted in the Bookstore before buying their texts. *The Bookstore sales receipt is required for any refund or exchange.*

University Centre

The University Centre is the "student building" run largely by the Carleton University Students' Association. The Unicentre, as it is affectionately known, offers recreational and educational services and conveniences that people may need or desire in their daily life on campus, and allows an opportunity to gather in relaxed and informal discussion outside the classroom. The Centre sponsors many events of interest to the community as a whole. It also encourages individuals and groups to take advantage of the facilities by initiating their own programs.

Services and facilities within the University Centre are: arts and crafts workshop, games area, variety and record store, women's centre, pubs, coffee house, lounges, food services, health services, Canada Employment Centre, travel agency, radio station (CKCU-FM), student newspaper (*The Charlatan*), information services, box office, amateur radio club, photographic club, and the offices of the Ombudsman, the Dean of Student Services and the Students' Association. The University Centre also provides rental facilities for both on- and off-campus groups.

Office of the Ombudsman

Jim Kennelly
Ombudsman

Dorothy Kent
Assistant Ombudsperson

Room 511, University Centre
Telephone 231-6717

The Office of the Ombudsman deals with individuals' grievances and complaints as well as requests for information. The Office acts independently of any structure in the University and is able to act objectively on behalf of the students, staff or faculty members. On-campus as well as off-campus problems are handled by the staff (i.e. academic appeals, landlord and tenant problems, consumer problems, etc.).

The Ombudsman's Office will act as an intermediary or provide information for students as the situation demands. Advice on legal issues can also be obtained from the Office.

Computing Services

Carleton University offers a modern and wide range of computing services to its students. Many departments have their own mini-computer systems applied to current research work, and students are often able to make use of these systems. The large main-site system is the one generally used to supply service to students for academic work. At present, it is a Xerox Sigma 9, augmented by a Honeywell Level 66.

The Academic Support Group of the Computing Services Department is staffed by computing professionals charged with the task of keeping Carleton's collection of programs up to date. They maintain COBOL, FORTRAN, APL and PASCAL language processors, among many others, for the use of computing science and programming courses. Modern data analysis packages such as SPSS and BMDP, and the IMSL mathematical library, are available for students using statistical methods of research, and several easily-used plotting programs have been developed by the Academic Support Group to facilitate the use of graphics. The Co-ordinator of User Services can provide any interested user with a complete catalogue of available programs. The Department also provides a user consulting service.

Carleton University Students' Association

Room 401, University Centre
Telephone 231-4380

The Carleton University Students' Association (CUSA) is a student-run organization that promotes the interests of the student body. Every student at Carleton is a member of CUSA and contributes an annual fee to help pay for the costs of CUSA's diverse activities and operations, and the running of the University Centre.

The policy body or 'government' of CUSA is the 28-member Students' Council, elected annually by the student population. Representation on this body is "rep-by-pop" by faculty, plus a President and Finance Commissioner elected at large.

CUSA funds and/or operates a variety of services such as the student newspaper (The Charlatan), an FM radio station (Radio Carleton — CKCU), legal aid services, women's centre and peer counselling centre, the Ombudsman's office, various publications including a Course Guide, a Survival Guide, a student handbook and a telephone directory, an assortment of clubs and societies, alternate education programs, speakers series, and an Education Office that offers academic and political information for all students. The Unicentre building on campus is also operated by CUSA and includes a variety store, a record store, Rooster's Coffee House, the Box Office, the Arts and Crafts workshops, Information Carleton, the Games Room, and a pub called Oliver's.

CUSA also represents the students' interest on the political level, as a lobby group, to outline the student point of view to the Administration and various government departments. Students at Carleton are also members of the National Union of Students and the Ontario Federation of Students.

The Students' Association is continually working to improve and expand its sphere of activities. To do so, CUSA welcomes student input and ideas, and individuals as well as groups are encouraged to make their feelings known to the elected members. Remember it's your students' association.

Alumni Association

Room 510, Administration Building
Telephone 613-231-3833

The Carleton University Alumni Association is an informal body which encompasses the 28,000 graduates from the University. Its primary function is to contribute to the development of the University, academically and otherwise, with the objective of enhancing the effectiveness with which the University fulfils its role in society. As well, the alumni association exists to ensure mutually beneficial relations and communication between the University and its alumni, and among the alumni themselves.

Alumni records are maintained by the Development Office, which is also responsible for all alumni fund-raising activities. Alumni communication programs are carried out through the Information Office. All alumni activities and programs are supervised by the Alumni Council, composed of alumni volunteer representatives.

General Regulations



General Admission Requirements

Persons wishing to follow programs of study leading to a degree, certificate or diploma must be formally admitted to the University.

Persons wishing to register in degree-credit courses without having been formally admitted to the University may do so as Special students. See pp. 34, 69.

Applicants should note that in view of limited accommodation in certain programs, holding the minimum admission requirements can only establish eligibility for selection to the University. This is particularly true for admission to the Bachelor of Architecture, Bachelor of Commerce, Bachelor of Engineering, Bachelor of Industrial Design and Bachelor of Journalism programs.

This publication contains admission requirements for the 1980-81 academic year only. Students wishing to apply for 1981-82 should request a copy of the 1981-82 Admissions brochure, which will include any revisions made since publication of this Calendar.

Applicants are reminded that the admission requirements contained herein are guidelines and, as such, are applied with an appropriate degree of flexibility. Individuals who are in any doubt about their eligibility for admission are encouraged to enquire at the Office of Admissions.

In the past few years, considerable flexibility has been introduced into the admission requirements but, at the same time, essential features have been preserved. As admission requirements are subject to continuing review, the University will most certainly make additional changes in the future, but only when convinced that these changes will be in the best interests of the student.

Guidelines have been adopted enabling the University to deal with applications from the most highly experimental schools. High school officials are invited to contact the Office of Admissions if it is felt that these admission requirements cannot accommodate certain programs being offered.

Dates of Entry

Students may be admitted to register in January, May, and July as well as in September. (See pp. 10-12 for details on the Academic Year.) It should be noted however, that a full range of courses is only offered during the Winter session, i.e. September to May.

Levels of Entry

Students may be admitted to Qualifying University, First or Upper years depending upon academic qualification. Where a student is admitted at the Qualifying University year level, a Major degree program is normally four years in length (i.e. Qualifying University, First, Second, Third) and an Honours degree

program is normally five years in length (i.e. Qualifying University, First, Second, Third, Fourth). Where a student is admitted at the First-year level, the degree program is reduced by one year, i.e. normally three years for a Major degree and four years for an Honours degree. Beyond First year, remaining degree requirements are determined by the total number of credits required for that particular degree program less those credits granted on transfer from previous post-secondary study.

It should be noted that students who are being considered for admission to the Qualifying University year level may, at the time of admission, receive credit for work completed at that level in the Canadian high school system. This is of particular importance if a student elects a Concurrent Studies Program or qualifies for Accelerated Progress (see below).

Concurrent Studies

Concurrent Studies enables local high school students to begin their university studies at the First-year level while completing their Grade 13 programs. Concurrent Studies is Carleton's response to the high school credit system and recognizes the fact that many students do not proceed from Grade 13 to university in a "lock-step" fashion. The intention of this feature is to facilitate the transition from secondary to post-secondary studies, thereby extending the "continuous progress" concept which has been so well developed at the elementary and secondary levels.

Any student who has completed the Ontario Grade 12 diploma with a minimum 70% average in addition to one or more Level 5 (Grade 13) subjects may participate. At the time of admission, credit will be granted for those Level 5 courses graded 60% or better which are acceptable for the student's selected degree program. The concurrent program must then be completed in a twelve month period, at which time the requirements on admission will be adjusted to reflect the additional Level 5 work completed.

Note:

Students must successfully complete six Level 5 courses (Ontario Secondary School Honour Graduation Diploma) in order to receive full credit for the Qualifying University year.

Accelerated Progress

Exceptional students who are entering Carleton's Qualifying University year will be interested in the accelerated progress policy. This unique policy is designed to enable very capable students to proceed towards a degree at a rate commensurate with their ability in university work.

Above-average performance is rewarded with a reduction in course requirements. For example, in an Arts or Science program, the maximum reduction possible under this policy could result in a student

obtaining a degree in three years beyond Grade 12. Detailed requirements are shown in the Calendar entries for Faculties.

Qualifying University Year

This program is roughly equivalent to Ontario Grade 13 and is offered in the Bachelor of Arts, the Bachelor of Engineering and the Bachelor of Science programs. Since all other undergraduate degree programs begin at the First-year level, students interested in these programs must first complete an appropriate Qualifying University year program in either Arts, Engineering or Science. (See Summary on pp. 35-39.)

Certificate and Diploma Programs

In addition to offering nine undergraduate degree programs, for which the admission requirements are stated on the following pages, Carleton offers four certificate programs and one undergraduate diploma program as follows:

Certificate in English Language and Composition

Admission Requirements

A university degree or teaching certificate. This is an in-service certificate intended primarily for practicing teachers in order to upgrade their knowledge of those areas of language and of writing theory which underlie the new Ontario guidelines and support documents.

Refer to p. 141 for program details.

Certificate in Public Service Studies

Admission Requirements

Junior Matriculation. The cases of experienced applicants without Junior Matriculation will be considered on their merits and the completion of certain subjects at Carleton may be required before admission. Candidates may be admitted with advanced standing, but must complete at least five courses for the certificate at Carleton University. Students who have completed an undergraduate degree are not eligible for admission to this program.

Refer to p. 106 for program details.

Certificate in the Teaching of English as a Second Language

Admission Requirements

Applicants are admitted on the recommendation of the Department of Linguistics. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college. Others with a strong academic background or with experience in the teaching of English as a second language may be admitted with permission of the Department.

Refer to p. 209 for program details.

Diploma in Music

Admission Requirements

This program is designed to attract individuals who have a strong background in performance on a musical instrument or voice, have been involved in the teaching of music, and who are desirous of obtaining additional academic qualifications.

Applicants will be admitted on the basis of an audition to be held in the Spring of each year. Although normal admission requirements are Senior Matriculation and an adequate level of performance, special consideration will be extended to other applicants under mature matriculation regulations.

Refer to p. 219 for program details.

Certificate in Law Enforcement Studies

Senior Matriculation with a 60% overall average, or Mature Matriculation, or Junior Matriculation and three years service in a police force (or equivalent agency). The cases of experienced applicants without Junior Matriculation will be considered on their individual merit, and the completion of certain subjects at Carleton may be required before admission, as provided by the University's Mature Matriculation policy. Candidates may be admitted with advanced standing, but must complete at least five courses for the Certificate at Carleton.

Refer to p. 207 for details.

High School Applicants

Ontario

The basic admission requirement is the completion of the Ontario Secondary School Graduation Diploma (Grade 12) with a minimum 70% average. Students who have successfully attained this level will be considered for admission to the Qualifying University year.

To be considered for admission to the First year, which is the usual level of entry, a student must successfully complete the Ontario Secondary School Honour Graduation Diploma (Grade 13) with a minimum 60% average. Students who have partially completed Grade 13 and who are not participating in the Concurrent Studies program (see above) will be considered for possible advanced standing at the Qualifying University year level. A later assessment might also be possible under the Accelerated Progress feature. (See p. 29.)

Detailed admission requirements for each undergraduate degree program can be found in chart form on pp. 35-39.

Carleton University utilizes, for admission purposes, the credit system as defined by the Ministry of Educa-

tion for Ontario. In calculating averages, the weighting factor assigned to a subject will be directly proportional to the credit value of that subject.

Quebec

Students from the Province of Quebec may apply for admission to Carleton University either upon completion of the Secondary V Certificate or after completing work towards the Collegial Diploma. (See Quebec CEGEPs, p. 33.)

Students applying on the basis of high school studies will be considered for admission to the Qualifying University year as follows:

General Statement

The Quebec Secondary V Certificate, with a minimum 75% average and including six, two-unit, college preparatory subjects at the Secondary V level. Applicants are cautioned, however, that because of enrolment restrictions, a somewhat higher average may be required to gain admission.

Individual Degree Program Requirements

Bachelor of Arts

Secondary V work to include two of: English; a language other than English; Mathematics (Functions).

Bachelor of Engineering

Secondary V work to include: Mathematics (Functions); Chemistry; Physics.

Bachelor of Science

Secondary V work to include: Mathematics (Functions); two Natural or Life Sciences, Chemistry and Physics.

Students who have completed a Grade 12 program will be considered for admission to First year.

Other High School Systems

Although all high school applicants may be considered for admission to either the Qualifying University or First year, depending upon academic qualifications, individuals from foreign systems of education will be considered for admission to the Qualifying University year only if they are able to present sufficient evidence that their secondary school background is appropriate to this level of entry with respect to academic content and level of achievement.

Generally speaking, applicants must meet requirements for admission to a university in their own province or country.

Note:

For programs which have a Mathematics prerequisite, if no Calculus is presented, appropriate program adjustments may have to be made to include Mathematics 69.007* (Calculus) as an extra half-course above and beyond the normal degree-program requirements.

The following certificates, recognized as approximately equivalent to the Ontario Secondary School Graduation Diploma (Grade 12), may be accepted to meet admission requirements to the Qualifying University year:

Newfoundland: Grade 11 (High School Graduation).

United States: High School Graduation (Grade 12).

United Kingdom, West Indies, East and West Africa, Hong Kong: The General Certificate of Education (or equivalent) with satisfactory standing in five subjects at the Ordinary Level (or equivalent), at one sitting.

Note:

Students who achieve at a high level in their first ten courses at Carleton University may have their program assessed for a possible reduction in degree requirements. (See Accelerated Progress, p. 29.)

The following certificates, recognized as approximately equivalent to the Ontario Secondary School Honour Graduation Diploma (Grade 13), may be accepted to meet admission requirements to the First year provided the overall minimum average is 65%.

Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island, Saskatchewan: Grade 12 (Senior Matriculation).

United Kingdom, West Indies, East and West Africa, Hong Kong: The General Certificate of Education (or the equivalent) with satisfactory standing in five subjects at Ordinary Level and two suitable subjects at Advanced Level, the latter completed at one sitting. The International Baccalaureate.

United States: Graduates of an American high school are not eligible for admission to the First year of a degree program. (Students who have completed the Freshman year at an American university will be considered for admission to the First year. See p. 32 for transfers from post-secondary institutions.)

Special Requirements for Overseas Students

Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral. Applicants whose mother tongue is a language other than English must clearly exhibit this ability by the results of the Test of English as a Foreign Language (TOEFL) given by the College Entrance Examination Board.

Translation of Documents

Applicants from non-English speaking countries must arrange to submit Certified English translations of their academic documents.

Financial Information

1. Current immigration laws do not normally permit foreign students to seek employment in Canada to assist themselves in paying any part of their education expenses. In addition, the University has no incoming

scholarships or financial assistance plans available for foreign students at the Undergraduate level

2. The annual composite University fee (including tuition) is approximately \$1,700 (Canadian funds) for one academic session (September-April). It is estimated that at least an additional \$3,000 will be required to meet other expenses for a twelve-month period. If a student plans to travel, additional funds will be needed. If a student intends to bring dependents, substantial additional funds are required.

Transfers from Post-Secondary Institutions

Residence Requirement

In order to qualify for a Bachelor's degree, or a certificate or diploma from Carleton University, an undergraduate student must complete at Carleton University at least the equivalent of the final year of that degree program, or at least five full course credits for any Certificate.

When a Faculty of the university further specifies "core", level, and detailed departmental requirements, such as Design Project or Honours Thesis, these must also be fulfilled.

Other Universities

Students applying from other recognized universities may be admitted with advanced standing if they are eligible to continue at the institution from which they wish to transfer.

An applicant who is attending or has attended institutions of post-secondary education must present:

1. *Official Certified Transcripts* of academic records mailed directly to this University by the registrars of the Institutions attended;
2. In addition, applicants who have taken only one year of study past the secondary school level may be required to submit an official transcript of high school marks mailed directly to this University by the principal of the high school concerned.

Credit may be received for courses taken at other recognized degree-granting institutions:

- (a) If courses are relevant to a student's proposed program; and
- (b) if the appropriate department recommends that such courses be credited to a student's program. Each application will be evaluated on its own merits.

Students who apply for admission to an undergraduate degree program who already possess an undergraduate degree either from Carleton or another university, are required to complete a minimum of one year's academic work at Carleton University as specified by the department in which the degree is to be taken in order to qualify for another undergraduate degree.

Provisional Admission

Select transfer applicants (those who have attended only one Canadian university or Quebec CEGEP and have demonstrated better than average academic achievement) will automatically be considered for Provisional Admission. The provisional approval will be given prior to the completion of the student's current year, and will provide a detailed statement of the credits to be granted upon transfer. Admission will be confirmed upon presentation of a final transcript which indicates the successful completion of all courses with suitable standing.

Ontario Colleges of Applied Arts and Technology (C.A.A.T.)

Students from Ontario Colleges of Applied Arts and Technology who present a minimum Second Class Honours standing will be considered for admission to the University and may receive advanced standing to a maximum of the equivalence of First year. Assessments regarding admission and advanced standing will be based on the following guidelines:

1. Applicants who have achieved an overall Second Class standing or better or who have Second Class standing or better in the last two semesters in a three year C.A.A.T. program will be considered for admission with advanced standing to a maximum of five courses (equivalent to one year). The advanced standing would be granted according to the appropriateness of the C.A.A.T. program, the course concentration, and the achievement in relevant courses.
2. Applicants who have achieved an overall Second Class standing or better, or who have Second Class standing or better in the last two semesters of a two-year program will be considered for admission. While such applicants will normally not receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).
3. Applicants who have completed two years of a three-year program and who have achieved an overall Second Class standing or better, or who have Second Class standing or better in the last two semesters, will be considered for admission. While such applicants will normally not receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).
4. Applicants who have completed the first year of a three-year C.A.A.T. program with an overall First Class standing will be considered for admission to First year of an appropriate University program.
5. On a trial basis, graduates of a two-year or a three-year C.A.A.T. program or applicants who have completed two years of a three-year C.A.A.T. program who do not meet the minimum published requirements but who are presenting *Third Class standing* may receive special consideration on an individual basis.

Other students presenting an incomplete program normally will not be considered for admission to Carleton University on the basis of that program. Such persons may enquire about possible alternatives if they are desirous of seeking admission to a Carleton University degree program at some future date.

Quebec CEGEPs

Students from Quebec CEGEPs who present a minimum Third Class Honours standing will be considered for admission to the University and may receive advanced standing to a maximum of the equivalence of First year.

Guidelines for First Year

In general, students who have successfully completed the First year of the "General" or pre-university program (or the equivalent program) with minimum Third Class Honours standing are eligible to be considered for admission to the First year.

Although specific subject requirements have been kept to a minimum, the following are considered necessary prerequisites for the degree program indicated:

Bachelor of Architecture: Mathematics, Physics.

Bachelor of Arts: None specified.

Bachelor of Commerce: Mathematics.

Bachelor of Computer Science: Mathematics; Physics required for some options, recommended for all others.

Bachelor of Engineering: Mathematics; Physics; Chemistry.

Bachelor of Industrial Design: Mathematics; Physics; Chemistry.

Bachelor of Journalism: Language other than English (French recommended).

Bachelor of Music: None specified.

Bachelor of Science: Mathematics; two experimental Sciences.

Students who have enrolled in the "General" program, but who have not successfully completed the First year will not normally be considered for admission. Students with an incorrect pattern of courses will have their records reviewed on an individual basis.

Guidelines for Second Year

Students successfully completing two years of the "General" CEGEP program or the equivalent, with minimum Third Class Honours standing will be considered for admission and may receive advanced standing to a maximum of the equivalence of First year.

Once students have enrolled in the Second year of the CEGEP program, they must meet the published stan-

dard for that level and cannot then be considered solely on the basis of their First year's academic work.

Note:

Students who make application on the basis of Second-year studies expecting advanced standing must submit detailed course descriptions upon request.

Mature and Special Admissions

Mature Matriculation

Persons who lack the normal entrance requirements as published in this Calendar may receive consideration for admission under the Mature Matriculation policy. Applicants will normally have been away from full-time studies for a minimum of two years and must be twenty-one years of age, or over, by December 31 of the year in which they wish to enrol.

Any person who meets the age requirement is eligible to be considered for admission as a Mature Matriculant to either part-time or full-time studies. This category is, however, designed for individuals who do not meet normal admission requirements but who would probably be successful in university studies. The successful completion of one or more courses as a Special student will normally be taken as sufficient proof of one's ability to succeed.

Mature Matriculants are normally considered for admission to the First year of an undergraduate program in Arts, Science or Engineering. Students seeking admission to the Faculty of Science who do not hold the necessary prerequisites may be required to take Qualifying University year courses in addition to the regular program. Students in a similar situation in relation to the Faculty of Engineering will not normally be considered until such time as the necessary prerequisites have been completed.

Mature Matriculants are not usually considered for entry into Honours programs. If, however, at the end of their First year they meet the requirements for an Honours program, they may apply to transfer internally to the program of their choice.

Applicants are required to submit proof of age with their application for admission.

Special students at Carleton University who meet the age requirement will normally be considered for admission as Mature Matriculants if:

- (a) they have obtained a grade of C- or better in at least one full course (or equivalent); and
- (b) are eligible to continue as Special Students.

Individuals contemplating Mature Matriculation are invited to seek advice at one of the following offices:

The Office of Admissions;
School of Continuing Education;

Non-Canadian students are normally not considered for admission under the Mature Matriculation category.

Special Students

Special students may be admitted to degree study upon indicating, through academic achievement at Carleton, a reasonable probability of future academic success. However, previous post-secondary studies will be taken into consideration at the time an application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions before attempting to qualify for admission on the basis of Special studies.

Normally, in the Faculty of Arts and the Faculty of Social Sciences, a Special student will be admitted after passing at least four full courses with a C- standing or higher in at least two full courses or equivalent.

Normally, in the Faculty of Science, a Special student will be admitted after passing at least four *approved* full courses with a C- standing or higher in at least two full courses or equivalent.

Note:

Students who perform at a higher level may gain admission after fewer courses, i.e. an A- average on two successive full courses or a B- average on three successive full courses.

Special students seeking admission must meet the requirements within the previous six full courses preceding formal application for admission and may not present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students who meet the age requirement for Mature Matriculation will normally only be considered on this basis if they have obtained a grade of C- or better in at least one full course (or equivalent) and are eligible to continue as Special students.

Previous Carleton Students

All former students who had been formally admitted to a degree, certificate or diploma at the undergraduate level, and who are seeking readmission either to that program or to another program, are governed by differing regulations, depending upon the Faculty or School which offers the program.

Please refer to the relevant program section of this Calendar or, if there is no specific entry dealing with readmission in that section, consult the appropriate Faculty Registrar's Office to determine whether or not it is necessary to submit a new application for admission.

Admission Procedures

How to Apply

Prospective students, when requesting an application

directly from the University, should provide a complete outline of their academic background.

The following applicants must apply through the Ontario Universities' Application Centre:

1. Current Ontario Grade 12 and Grade 13 students should obtain a preprinted application form from their high school and arrange to have it submitted to the Application Centre.
2. Other applicants should obtain a common application form from the Office of Admissions, Carleton University, and submit this completed form to the Application Centre.
3. All applicants are required to reveal all previous secondary and post-secondary studies (whether they were successfully completed or not) when completing the application for admission.

Applicants who have previously registered at Carleton are exempt from the foregoing procedures. These students should request a Carleton application form from the Office of Admissions and submit the completed form directly to that office.

Application Deadlines

The following are application dates for the 1980 admission year:

April 1: Candidates whose documents originate outside Canada or the United States.

July 2: Applicants for transfer from other universities and colleges in Canada or the United States.

July 2: Candidates applying as Mature Matriculants.

August 15: Candidates applying for admission solely on the basis of work completed as Special students at Carleton University.

September 2: High school candidates whose documents originate in Canada or the United States.

December 1: Candidates applying for the Second term of the 1980-81 Winter session.

Early Admission

Offers of Early Admission will be based on the previous year final and current year interim marks.

For Ontario high school applicants, offers will not be released before June 13. The onus is on the student who does not receive an offer of early admission to supply official final marks to the Office of Admissions.

Out-of-province applicants will receive an offer of admission as soon as interim marks are received by the University and the assessment completed.

Carleton reserves the right to withdraw offers of admission for failure to complete the school year satisfactorily. In addition, applicants are advised that although they may receive an offer of admission based on interim marks, final marks, when they are received, will become part of the University's admission record.

Summary of Undergraduate Degree Programs

Architecture

Degree

B. Arch.

Length of Course from Junior Matriculation

6 years

Length of Course from Senior Matriculation

5 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Architecture, students must complete this level of study in high school or by registering in either Qualifying University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying University year Science or for Qualifying University year Engineering as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average and including Functions, Calculus and Physics; or the successful completion of Qualifying University year with an appropriate course pattern.

Admission requirements are for the 1980-81 year only, and are based on the Ontario High School system. Holding the minimum admission requirements only establishes eligibility for consideration.

Arts

Degrees

B.A.

B.A. (Honours)

Length of Course from Junior Matriculation

4 years

5 years for Honours

Length of Course from Senior Matriculation

3 years

4 years for Honours

Admission Requirements, Qualifying University Year

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at levels 3 and 4, including two of English, a language other than English and Mathematics, at Level 4.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average; or the successful completion of Qualifying University year Arts.

For Honours: 65% on the Honour Graduation Diploma, or the equivalent.

For a Major in Mathematics, Functions and Calculus, or the equivalent (Mathematics 69.006* and 69.007*) must be included; for a Major in Biology, Economics or Psychology it is recommended that they be included. For a Major in Psychology, English is also recommended. Students intending to major in Biology should, in addition, present Chemistry. Students intending to major in Canadian Studies should present French.

Commerce

Degree

B.Com. (Honours)

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Commerce, students must complete this level of study either in high school or by registering in Qualifying University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average, including Functions and Calculus; or the successful completion of Qualifying University year, with an appropriate course pattern.

Computer Science

Degree

B.C.S.

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Computer Science, students must complete this level of study in high school or by registering in Qualifying University year Science in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying University year Science as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including Functions and Calculus. Physics is required for the Hardware and Scientific Applications areas of specialization and would be advantageous for the remaining areas.

Engineering

Degree

B. Eng.

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at levels 3 and 4 including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus, Chemistry and Physics, or the successful completion of Qualifying University year with an appropriate course pattern. A student unable to meet the specific course requirements but otherwise admissible to Carleton University may be admitted to the Faculty of Engineering, but will be required to satisfy the outstanding requirements at the Qualifying University year level.

Industrial Design

Degree

B.I.D.

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Industrial Design, students must complete this level of study in high school or by registering in either Qualifying University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying University year Science or for Qualifying University year Engineering as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus, Chemistry and Physics or the successful completion of Qualifying University year with an appropriate course pattern.

Journalism

Degree

B.J. (Honours)

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Journalism, students must complete this level of study either in high school or by registering in Qualifying University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average, including a language other than English (French is recommended); or the successful completion of Qualifying University year with an appropriate course pattern.

Music

Degree

B.Mus. (Honours)

Length of Course from Junior Matriculation

5 years

Length of Course from Senior Matriculation

4 years

Admission Requirements, Qualifying University Year

As there is no Qualifying University year in Music, students must complete this level of study either in high school or by registering in Qualifying University year Arts. Hence, the admission requirements at this level are those for Qualifying University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 65% average; or the successful completion of Qualifying University year.

Science

Degrees

B.Sc.

B.Sc. (Honours)

Length of Course from Junior Matriculation

4 years

5 years for Honours

Length of Course from Senior Matriculation

3 years

4 years for Honours

Admission Requirements, Qualifying University Year

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of ten Advanced or Enriched Phase credits at Levels 3 and 4, including an appropriate preparation in Chemistry, Physics, and Level 4 Mathematics.

Admission Requirements, First Year

The Ontario Secondary School Honour Graduation Diploma, or the equivalent, with a minimum 60% average, and including Functions, Calculus and two Sciences; or the successful completion of Qualifying University year with an appropriate course pattern.

For Honours: 65% on the Honour Graduation Diploma, or the equivalent. For Honours in Psychology Level 5 English is recommended.

Registration

Requirements

All students attending the University are required to register in their courses with the Registrar's Office of the appropriate jurisdiction at the time designated for the session, and to inform this office in writing of any changes in registration.

Students who do not register at times designated for their session will be charged a late registration fee. (See p. 47.)

A student's registration shall not be considered to be complete until arrangements have been made for the discharge of all financial responsibilities to the University in accordance with the University policies.

No student will be permitted to register until all outstanding accounts due to the University have been paid. (See Delinquent Accounts, p. 48.)

Health Service Requirements:

See p. 50.

Course Selection

Students proceeding to a degree, diploma or certificate must select their courses according to the requirements set by their faculty or school, and Major department.

Students planning to undertake professional training beyond their undergraduate studies should ensure that their programs meet the requirements of admission to their intended school or faculty.

Cross-Referenced Courses

Some courses appear in the calendar more than once. These cross-referenced courses may be taken in any of the departments under which the course is listed. Students are advised, however, to consult with their Major department as to the appropriate designation, assigned to the course, for their program of study.

The Departmental designation may not be changed after the last date for withdrawal in any term or session.

Challenge for Credit

Challenge for Credit is a Carleton University policy that enables students to gain undergraduate academic credit for their own learning and experience outside the university.

Simply stated, Challenge for Credit gives the student the opportunity to be examined on, and receive credit for, a recognized Carleton course without meeting the normal requirements of registration, attendance, and instruction. The student first challenges the academic

department with evidence that he or she has adequate experience and learning relevant to the course in question. If the department is satisfied with this evidence it accepts the challenge, and sets an appropriate examination. If the student is successful in the examination, the course is credited to his or her academic record. Challenge for Credit is available only to students formally admitted to and registered in a program leading to a degree, diploma, or certificate. Special students are not eligible to challenge for credit.

Students wishing to challenge a course for credit should enquire at their Faculty Registrar's Office.

Transfer of Credit for Courses Completed at Other Universities

1. Prior to Admission

At the time a student is considered for admission, credit may be granted for individual courses successfully completed at other recognized, degree-granting institutions, if:

- (a) the individual courses are relevant to a student's proposed program; and
- (b) the appropriate academic department recommends such action.

Each application is evaluated on its own merits.

2. Subsequent to Admission

Students who have been formally admitted to a Carleton degree or certificate program may take courses at another university and have the credit transferred to their program if prior permission is received, according to established faculty procedures, before commencing the course.

Auditing Courses

A student may, with the instructor's consent, register to audit a course (i.e. attend without receiving credit), in addition to those courses being taken for credit. Although audited courses will receive no academic credit, they will be counted as part of the total course load.

Full-time students may register to audit a course without an additional fee; all others must pay the regular course fee.

Students who enrol to audit must so indicate on their registration form or course-change form. The last date for change from audit to credit or from credit to audit will be the last date for course changes.

Course Changes

Changes of course or changes of section within a course must be applied for at the appropriate Faculty Registrar's Office. Changes must be made by the dates designated in the Calendar under the Academic Year and must be approved by the department in which the course is offered and by the Major department. Changes of course include changes of status from credit to audit or audit to credit. (See Fees pp. 46-49.)

Program Changes

Students wishing to change faculty or school, or change Majors, or change between Major and Honours, must apply to make such changes. Applications should be made at the Registrar's Office of the faculty in which the student is registered, after consultation with the faculty, school or departments concerned.

Changes in Major may be effected at any time of the year.

Students wishing to change from a Major to an Honours program should submit an application on or before October 1.

The deadlines for application for degree program changes are:

Winter Session

1. First term: Fourteen days prior to the last date for late registration.
2. Second term: On or before the Friday of the first week of lectures.

Summer Session

On or before the first day of Evening division classes.

Withdrawal

Students who are withdrawing from a course or courses, or entirely from the University, must notify their appropriate Faculty Registrar's Office, either on the specific form designated for the purpose and available from that office, or by letter.

The official date of withdrawal for academic notice is the date on which the notification is received in the Faculty Registrar's Office. Partial refund of fees for students withdrawing from a course or courses, but not entirely from the University, will also be calculated as of that date. In order to obtain a partial refund of fees, a student who withdraws entirely from the University must also return his or her identity card to the appropriate Faculty Registrar's Office. The date of receipt of the identity card is the effective date for determination of partial refund of fees.

Students *must* withdraw from a course or courses, or from the University, on or before the appropriate last date for withdrawal as shown in the Calendar for the Academic Year (see pp. 10-12). The withdrawal, along with the date of withdrawal, will be entered on the student's transcript as *Wdn*, which is defined as "Withdrawn in good standing. No academic credit."

It is not possible to withdraw from a course or courses, or from the University, *after* the appropriate designated last date for withdrawal, and no partial refund of fees is available unless all required procedures, as outlined above, have been completed by the student on or before the appropriate designated last date for withdrawal.

For complete details about partial refund of fees see p. 47 (Fees).

For the various last dates for withdrawal for the 1980-81 Academic Year see pp. 10-12.

Notes:

1. The responsibility for taking all steps necessary for withdrawal is entirely that of the student. Ceasing to attend classes, or informing an instructor of intent to withdraw *does not* constitute withdrawal.
2. Withdrawal may affect the student's promotion status as prescribed by regulations of the various faculties and schools. Students are advised to consult their Faculty Registrar's Office for information and guidance.
3. A student who withdraws from a course retains no academic credit for any part of that course.

Residence Requirement

In order to qualify for a Bachelor's Degree or a Certificate or Diploma from Carleton University, an undergraduate student must complete at Carleton University at least the equivalent of the final year of that degree program or at least five full course credits for any Certificate or Diploma.

When a Faculty of the University further specifies "core", level, and detailed departmental requirements, such as Design Project or Honours Thesis, these must also be fulfilled.

Proficiency in English

(Regulations supplementary to Admission Requirements)

All new students registered in degree programs who are non-native speakers of English will be required to write a placement test in English. Individuals who achieve an inadequate score on the test will be advised

to pursue a program of English Language instruction, which is available at the University. Both testing and instruction will be administered by the Linguistics Department.

Students are advised that this placement test in English is for diagnostic purposes only and will not form part of the academic record. It is also emphasized that, while the test itself is compulsory, the subsequent instruction is optional.

University of Ottawa-Carleton Visiting Undergraduate Students

A full-time undergraduate student in Second or higher year may, with departmental permission, take the equivalent of one course credit per Winter session at the University of Ottawa without additional fee. Interested students should enquire at their Faculty Registrar's Office. This exchange agreement is not in effect for the Summer session.

General

The Senate may at any time require a student to withdraw from the University if his or her conduct, attendance, work or progress is deemed unsatisfactory.

Evaluation

To gain standing in a course, a student must meet the course requirements for attendance, term work, and examinations.

Instructors will inform their classes in writing before the last date for course change of the elements that will contribute to the final grade and their weighting, including attendance, class participation, essays, tests, and final examinations. Also stated will be the availability of supplemental and grade-raising examinations, and the method of computing a grade revised by these examinations.

Supplemental and grade-raising examinations are to be available in all courses with written final examinations for those *undergraduate* students who have not been disqualified from such by receiving the grades of *FNS* or *Abs*.

Supplemental and grade-raising examinations will not be available in courses where there are no final examinations.

Standing in Courses

Standing in courses will be determined by departments. Standing in courses will be shown by alphabetical grades. The system of grades used, with corresponding grade points, is as follows:

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

The following percentage equivalents are published solely to assist other institutions in interpreting letter grades. Students are advised that these equivalents have no internal application.

A+ 90-100	B+ 77-79
A 85- 89	B 73-76
A- 80- 84	B- 70-72
C+ 67- 69	D+ 57-59
C 63- 66	D 53-56
C- 60- 62	D- 50-52

Other notations are as follows:

Aeg

Pass standing granted under special circumstances. Aegrotat standing is granted only by a Faculty committee, in response to a student's application. (See Deferred Final Examinations, below.)

F

Failure. No academic credit.

FNS

Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit.

Abs

Absent from final examination. No supplementals. No academic credit. *Abs* is usually equated to failure.

Wdn

Withdrawn in good standing. No academic credit.

Def

Indicates deferral of final grade has been approved by a Faculty committee. (See Deferred Final Examinations, below.)

IP

In Progress

Ch

Credit granted under challenge for credit policy.

Promotion and Probation

The conditions under which undergraduate students may be promoted, and placed on or relieved of probation, are shown in the Calendar entries for the Faculties and Schools.

Accelerated Progress

Qualifying-University year students who perform at an above-average level may achieve a reduction in the number of courses required to graduate, under the "Accelerated Progress" policy. Detailed requirements are shown in the calendar entries for Faculties.

Graduation

Undergraduate students are required to meet the graduation standards laid down by their Faculty or School.

Students who wish to be considered for graduation must apply at their Faculty Registrar's Office by the following deadlines:

Winter Graduation (February): December 1

Spring Graduation (June): February 1

Fall Graduation (November): September 2

Examinations

Students writing tests and examinations should be aware of the rules governing examination conduct, which are printed on the cover of official examination booklets.

It may be necessary to schedule mid-year and final examination for classes held in the evening during the day and vice versa.

All tests and examinations, except laboratory examinations, are subject to the following rules:

1. Tests or examinations given in class may not exceed the time allotted for the class.
2. Final examinations in the Summer session will be held in official Examination periods.
3. In Qualifying-University and 100-level courses mid-year and final examinations will be held in the official examination periods.
4. In Qualifying-University, 100-, 200-, and 300-level courses, no tests or examinations may be held during the last two weeks of classes in the First or Second term of the Winter session, between the end of classes in the Second term and the beginning of formally scheduled examinations or in the last two weeks of classes of the Summer term.
5. In courses below the 400 level, take-home examinations may not be assigned before the last day of classes and are due on the last day of the official examination period.
6. In courses at the 400 level and above, arrangements for unscheduled examinations are at the instructor's discretion but must be announced at least three weeks before the examinations.

Deferred Final Examinations

Students who are unable to write a final examination because of illness or other circumstances beyond their control, or whose performance on the examination has been impaired by such circumstances, may, on application, be granted permission to write a deferred final examination. Such applications must:

1. Be made in writing to the appropriate Faculty Registrar's Office within a week after the original final examination; and

2. Be fully supported in cases of illness by a medical certificate or by appropriate documents in other cases.

Aegrotat standing will be considered for applicants for deferred finals but will be granted only if term work has been of high quality. A student granted aegrotat standing may apply to write a deferred final examination. Deferred final examinations are written at the time of the supplemental examinations for the session concerned.

Supplemental Examinations

Students may on application write supplemental examinations in courses graded *F*, under conditions defined by the Faculties.

Students are informed that the grade *FX* shown for a course on the Statement of Marks form indicates that there is no Supplemental examination privilege in that course.

Supplementals must be written at the next supplemental examination period, and if a supplemental is failed, the student must repeat the course before writing another examination in it.

Students may apply to write supplemental examinations outside of Ottawa.

Grade-Raising Examinations

Students may on application write grade-raising examinations in courses already passed, under conditions defined by the Faculties.

The grade obtained in a grade-raising examination supersedes the original final grade. A grade-raising examination in a course can be written only once, and at the next scheduled supplemental examination period.

Review of Grades

Students are entitled to review of a final grade. Those wishing to receive such a review should enquire at their Faculty Registrar's Office, after which they may wish to make a formal application for this review. Applications must be filed with the appropriate Faculty Registrar's Office within fourteen days of the official release of grades for the term.

Requests for review are dealt with by the departmental chairmen in consultation with members of the department.

The fee for review is \$10 per examination, which is refundable if the grade is raised. Students awaiting the outcome of a review must still apply for supplemental examinations by the prescribed deadline.

Release of Grades

A Statement of Marks is mailed to each student as soon as the grades are available after the end of the First and Second terms of the Winter session and after the end of the Summer session. A Statement of Marks is mailed to every applicable student as soon as possible after each supplemental examination period.

Students may obtain a copy of their official transcript by completing a copy of the "Request for Academic Transcript" form which is available in their Faculty Registrar's Office. Transcripts required for professional and graduate schools should be ordered well in advance of any deadline set by these institutions.

Students are advised that no Statement of Marks or official transcripts will be released by the University until all outstanding accounts due have been paid. (See Delinquent Accounts, p. 48.)

Fees

General Information

Because the Calendar is published several months in advance of the academic year, the University reserves the right to change fees and refund policies without notice.

Tuition Fees: Undergraduate, Special and Foreign Students

The annual composite fee includes tuition, Students' Association, Athletics, Health Services and University Centre fees, and where applicable, laboratory, graduation and survey camp fees.

Fees for Full-Time Students

(Four or more full-credit courses)

Tuition

Commerce, Qualifying University Year	
Undergraduates, Special	\$ 806.00
Arts, Journalism	\$ 813.00
Music	\$ 818.00
Science	\$ 823.00
Computer Science	\$ 851.00
Engineering, Architecture, Industrial Design	\$ 880.00
Foreign students not eligible for exemption	\$1,612.00

Miscellaneous Fees

In addition to the tuition fee above, full-time students will be assessed the following compulsory miscellaneous fees.

Students' Association (see note a)	\$ 32.50
Athletics	50.00
Health Services	17.50
University Centre	20.00
Total	<u>\$120.00</u>

Fees for Part-Time Students (see note b)

(Per full-credit course for students taking fewer than four credits)

Tuition

All students other than foreign	\$158.00
Foreign students not eligible for exemption	\$322.00

Miscellaneous Fees

In addition to the tuition fee, part-time students will be assessed the following compulsory fees for each full-credit course:

Students' Association (see note a)	\$ 6.50
Athletics	10.00
Health Services	3.00
University Centre	4.00
	<u>\$ 23.50</u>

Notes

(a) The Carleton University Students' Association Fee includes a fee of \$1.00 for the National Union of Students, or \$0.20 per full-credit course for part-time students and a fee of \$1.50 for the Ontario Confederation of Students, or \$0.30 per full-credit course for part-time students.

(b) The half-credit course fees will be assessed at one half the full-credit course amounts.

(c) Students transferring from a First-term half-credit course to a Second-term half course will be given credit for the unexpired portion of the First-term half course and charged full fee for the Second-term half course.

Exemptions for Foreign Students

Subject to approval by the Admissions Office, the following categories of foreign students are exempt from the foreign students' fee indicated above and will instead be assessed the regular tuition fee:

1. Persons, or dependents of persons, admitted to Canada under diplomatic visas. (Immigration Act, Section 7(1) (A))
2. Dependents, excluding the spouse, of a person admitted to Canada on a special visa to practise his or her special profession for a specified period of time. (Immigration Act, Section 7(1) (H))
3. Persons sponsored and financially assisted by agencies such as the Canadian International Development Agency, International Development Research Centre, etc.
4. Persons studying under a reciprocal exchange agreement recognized by the Ministry of Colleges and Universities.

Persons who believe that they qualify for exemption under one of the foregoing categories must submit documentation, at the time of registration, to support their claim. University personnel will be available at that time to answer any queries.

Tuition Fees: Senior Citizens

All persons sixty years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee.

Late Registration Fees

Full-time students

\$10 first week after the registration period

\$15 second week after the registration period

Part-time students

\$5 (per full course) after the registration period

Late Registration fees are nonrefundable

Method of Fee Payments

Fees may be paid in accordance with either of the following plans.

1. Payment in full at the time of registration.
2. Payment in two installments:
 - (a) At registration, $\frac{1}{2}$ of the total tuition fee plus all miscellaneous fees plus a nonrefundable deferred payment fee of \$.50 per half course (4 or more courses \$5.00);
 - (b) at or before January 15, the remaining half of the total tuition fee.

Scholarships, bursaries, and loans administered by the University shall be applied first to fees, provided this is not contrary to the terms of the award.

Personal cheques will be accepted for payment of accounts but the University reserves the right to cancel the use of this method by any student if it is abused. A service charge of \$5.00 will be made for each cheque returned to the University as non-negotiable for any reason. Students are requested to have their own cheque forms available when making payments.

Income Tax Certificates

Certificates for Income Tax purposes of tuition fees paid will be available from the Business Office prior to February 28, 1981 to all students who have paid their accounts in full.

Overdue Accounts

Fees are due and payable at the time of registration. However, students may be permitted to select a payment program, in which case the last payment due-date is January 15. Should a student fail to complete the payments as arranged at registration, or fail to make satisfactory arrangements for the discharge of fees or other outstanding amounts by the last payment due-date, the University reserves the right to cancel the student's registration. All charges and outstanding fees accrued to the date of cancellation will remain due and payable on the student's account.

Withdrawal and Refund

See also p. 41.

The composite fee for full-time students is a charge for four full courses or more. No charge is made for the fifth or any additional courses; conversely, no refund will arise as a result of withdrawal from a course by a full-time student unless the change alters his or her status from full-time to part-time.

Students who withdraw from a course, or from the University, are required to notify their Faculty Registrar in writing, or fill out the appropriate forms available from the Faculty Registrar's Office. Students who withdraw from the University must return their identity cards to the appropriate Faculty Registrar's Office immediately. Refunds will be calculated by the date of receipt of the card.

A refund of the composite fee less a registration charge calculated at the rate of \$5.00 per half course for part-time students and \$50.00 for full-time students may be made for withdrawals before the last date for late registration in the First term. After the last date for late registration, the tuition portion of the composite fee less the registration charge is amortized over the period from the first day of classes to the last date for withdrawal with partial refund.

A detailed schedule of refund credits is available at the Business Office. As an example, the following is an illustration of how this schedule applies to a student registered in the Winter session in Arts:

	Full Time (4 or more credits)	Part-Time (per full-credit course)
Original Assessment	\$933.00	\$181.50
Less: Registration Charge	\$ 50.00	\$ 10.00
Credit up to last day for Late Registration (September 19, 1980)	\$883.00	\$171.50
Less: Miscellaneous Fees (after September 19, 1980)	\$120.00	\$ 23.50
Amount to be pro-rated over period September 8, 1980 — February 20, 1981 (last day for withdrawal from Winter session full-credit courses)	\$763.00	\$148.00

The amount to be pro-rated is spread over the period from the first day of classes to the last day for withdrawal with partial refund. In the case of the foregoing example any student who withdraws after the last day for Late Registration will receive a refund of \$763.00 (\$148.00 part-time/per full-credit course) less approximately \$30.00 (\$5.00 part-time/per full-credit course) for each week or partial week of classes as determined by the effective date appearing on the withdrawal/change form.

Note that Miscellaneous fees are not refundable after the last day for Late Registration. Late Registration or Deferred Payment fees are not refundable.

The appropriate refund credit will be applied to the student's account and any amounts due at that time will be offset before a cash refund is prepared.

Following are the last dates for withdrawal with partial refund of fees; no application for withdrawal and refund will be considered if received after these dates:

1980-81 Winter Session

November 14, 1980 First term half course

February 20, 1981 full courses

March 20, 1981 Second term full and half courses

1981 Summer Session

June 16, Evening division First term half course

July 15, Day division First term half course

July 21, Evening division full course

July 31, Day division full courses and Evening division
Second term half course

August 6, Day division Second term half course

Examination Fees

1. Supplemental and grade-raising examination fees are charged on a per paper basis. The fee, when the examination is written at Carleton University, is \$10.00 per paper; when the examination is written other than at Carleton University, \$20.00 per paper. When deferred final examinations are written other than at Carleton University, the fee is \$10.00 per paper.

2. Examination fees are non-refundable.

Transcript Fees

All students are entitled to two free transcripts. After these have been issued the fee is \$1.00 for the first, 50 cents for the second and 25 cents for each additional copy at any one time of ordering.

Locker Fees

A fee of \$2.00 is charged for the use of locker space during the academic year. Lockers are allocated on a first-come first-served basis and may be shared. Locks will be removed from lockers occupied by unauthorized persons and the contents turned over to Security Services. A refund of locker fees will be made only up to the last date for late registration.

Lockers must be vacated by May 15 for the Winter session and by August 22 for the Summer session, after which they will be cleared and any articles found therein will be treated as abandoned. Such articles will be turned over to the University Lost and Found and disposed of without further notice after a period of three months.

Deposit-Gowns and Hoods

At each convocation the University makes available for graduating students appropriate academic regalia. To obtain this regalia students are required to pay a \$25.00 deposit which is refundable when the regalia is returned.

Delinquent Accounts

Registration shall not be complete until a satisfactory arrangement has been made for the payment of fees, and may be cancelled should the student fail to meet these arrangements.

If students owe the University any money at the end of an academic session their accounts become delinquent.

Students with delinquent accounts will not receive examination results, are not permitted to receive transcripts, may not graduate and will not be permitted to register again until all monies owing have been paid in full by cash or certified cheque.

Parking

Permission to park on the campus is granted for a fee to students and others associated with the University, but this permission is conditional upon co-operation in the observance of the regulations. Penalties will be imposed for infractions, and under certain circumstances, cars will be towed away at the owner's risk and expense. Security Personnel are authorized to issue City of Ottawa traffic tickets on campus. Any vehicle not displaying a valid Carleton Permit is subject to this type of ticket.

In this, as in other respects, examination grades will be withheld from students owing sums of money to the University. Unless cause can be shown, the third infraction may lead to withdrawal of parking privileges. The University accepts no responsibility for cars or their contents parked or operated on the campus. The regulations related thereto are available in the Traffic and Parking Office. Students and staff who bring cars to the campus are expected to make themselves familiar with these regulations. Parking lots are indicated on the map at the back of the Calendar, pp. 486-487.

University Library

The University Library is located on the south-west side of the main quadrangle. The collection consists of over one million books and periodicals and more than 350,000 microfilms, microfiches, cassettes, and discs. The majority of these items are on open shelves. The Map Library, with 88,000 maps and atlases, is housed in the Loeb Building, Room D299.

The Library's main (or second) floor contains the Reference and Information, Circulation, Interlibrary Loans, and Audio services. The first floor houses books and periodicals in science and technology, and the Micro area, while floors 3, 4, and 5 contain the remainder of the collection, with Documents in a separate area on the 5th floor. Seating is available on all floors.

The Library is governed by regulations approved by Senate. Copies are available at the Information Desk.

The Library collection is protected against theft by an electronic book detection system. As a condition of use of the Library all users must submit books, brief cases, bags, etc. for inspection at the exit, if requested to do so. Fines are charged for overdue books, and, as noted under "Delinquent Accounts", examination grades and transcripts will be withheld from students owing money to the University.

Geoffrey H. Briggs, *M.A. (Cambridge) Dip. Lib., Dip. Arch. (London)*, University Librarian

Neil Brearley, *B.Sc. (London) B.L.S. (British Columbia)*, Reader Services

E. Martin Foss, *B.A. (Alberta) B.L.S. (British Columbia)*, Technical Services

Verna Z. Wilmeth, *B.A. (San José) M.A.L.S. (Michigan)*, Administrative Services

Milly Armour, *B.Sc. (Glasgow) B.L.S. (Ottawa)*, Acquisitions

Janet Carson, *B.A. (Bishop's) M.A., M.L.S. (Western Ontario)*, Orientation

Gail Catley, *B.Sc., M.L.S. (McGill)*, Reference Services

Terry Clark, *B.A. (Winnipeg) M.A. (Manitoba) M.L.S. (Western Ontario)*, Interlibrary Loans

Bozena Clarke, *B.A. (Carleton) M.L.S. (Toronto)*, Serials

Barbara Farrell, *B.A. (London) M.A. (Carleton)*, Maps
Hilda Gifford, *B.A., B.L.S. (McGill)*, Collections and Gifts

Susan Jackson, *B.A. (Carleton) B.L.S. (McGill)*, Documents

Carrol Lunau, *B.A. (York) B.L.S. (Alberta)*, Systems
Jeremy Palin, *B.A., B.L.S. (British Columbia)*, Special Collections

Dorothy Rogers, *M.A. (Yale) B.L.S. (Toronto)*, Cataloguing

Elspeth Ross, *B.A. (Queen's) B.L.S. (Toronto)*, Collection Development

Audrey Turner, *B.A. (Carleton)*, Special Services

Health Regulations

Medical insurance is compulsory for all full-time students. It is the student's responsibility to provide the insurance number when receiving medical care.

All Ontario students should be covered by OHIP.

Students whose home residence is outside Ontario should have coverage under their provincial plan.

Students from outside Canada should apply for OHIP. This application should be made as early as possible because there is a delay in coverage after application.

Tuberculosis Control

On admission to the University, every student requires a tuberculin skin test, or chest X-ray if tuberculin positive. Tuberculin skin tests are administered in the Health Services, sixth floor University Centre, or at Provincial Chest Clinics.

Students who object to the foregoing requirements on conscientious grounds must consult the University physician, and provide a written statement giving the basis for such objection.

The academic dress of Carleton University is a compromise between the style of hoods outlined in the American Intercollegiate Code and the dress of the ancient foundations of Britain and America. The Bachelor's or Master's hood is of simple or Oxford shape, made of black stuff and lined with two chevrons of red and black on a silver field.

The Master's hood, made of black silk, is again of the simple shape but open to show more of the lining. The Doctor of Philosophy hood is again made of silk, but completely opened to show the lining and provided with a purple border.

The border of the Bachelor's or Master's hood denotes the degree granted, according to the following colour combinations: *Architecture*, cerise; *Arts*, white; *Commerce*, camel brown; *Engineering*, orange; *Industrial Design*, dark cardinal; *Journalism*, white with a black cord sewn slightly in from the lower border; *Music*, Venetian pink; *Science*, golden yellow; *Social Work*, cream.

The Bachelor's gown, to be worn with the above hoods, is of full length, made of black stuff, with a gathered yoke behind, and long open-fronted sleeves. The Master's gown is of full style, made of black silk or rayon, with full gathered yoke behind, and closed sleeves with an opening at the elbows. The Doctoral gown is the same style as the Master's, made of fine royal blue cloth with facings of a light blue silk.

The gown of the Honorary Doctor of Laws, Literature, Science and Engineering is a blue robe with bell-shaped sleeves, made of fine royal blue cloth with facings and sleeves in light blue silk. The hood is made of the same material as the gown, has the same lining as that for the degrees granted by examination, and is bordered with dark mauve for the degree of Doctor of Laws, vibrant blue for the degree of Doctor of Literature, red for the degree of Doctor of Science and orange for the degree of Doctor of Engineering.



School of Computer Science





School of Computer Science

Officers of the School

Director

J.E. Neilson

Registrar

To be announced

General Information

Carleton's Computer Science programs take full advantage of campus-wide computing expertise and computing resources. In addition to courses offered by the School, courses cross-listed in Computer Science are offered by the Department of Systems Engineering and Computing Science (Faculty of Engineering), the Department of Mathematics and Statistics (Faculty of Science) and the School of Commerce (Faculty of Social Sciences).

Most of the computing resources for the program are provided by the University's central computers, a dual Xerox Sigma 9 system and a Honeywell Level 66 system, operated by Computing Services. Languages supported by these facilities include FORTRAN, COBOL, PL/1, APL and PASCAL. In addition, these facilities support emulators and cross-assemblers for a wide variety of micro- and mini-computers.

Programs Offered

The School of Computer Science offers a program leading to the degree of Bachelor of Computer Science (Honours), B.C.S. (Hons.).

In addition, the School participates in a number of programs leading to combined Major or Honours Bachelor of Arts or Bachelor of Science degrees. The School also offers a number of introductory service courses that may stand alone in a program in another field of study, or be augmented by a selection of other Computer Science courses to form an area of specialization.

Bachelor of Computer Science (Honours), B.C.S. (Hons.) Program

The Bachelor of Computer Science degree is an Honours program in which candidates are required to complete twenty full-course credits or equivalent, after Senior Matriculation.

In order to provide the student with a choice of specialization, while at the same time ensuring that all relevant topics are covered, the program of studies is designed around a series of core courses combined with a choice

of one of five programs of options. These options are designed to prepare graduates for professional careers in Computer-Science related occupations or for advanced study at the graduate level.

The program is offered mainly in the Day division. Part-time students will find, however, that many of the courses are also available in the Evening division.

Admission Requirements

First Year

1. Completion of Qualifying University year in Arts, Engineering or Science, with a grade-point average of 4.0 or better, and including Mathematics 69.006* and 69.007*; or

2. The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including Functions and Calculus. Physics is required for the Hardware and Scientific Applications options and would also be advantageous for students electing the other options.

Advanced Standing

Applications for admission beyond First year will be assessed on their individual merits. Advanced standing will be granted only for those subjects assessed as being appropriate for the program and for the option elected.

Mature Matriculation

Persons who lack the normal entrance requirements as published in this Calendar may receive consideration for admission under the Mature Matriculation policy. Applicants will normally have been away from full-time studies for a minimum of two years and must be twenty-one years of age, or over, by December 31 of the year in which they wish to enrol. For full details see p. 33.

Course Requirements

The program for the degree of Bachelor of Computer Science (Honours) consists of a total of twenty full-course credits, normally taken five each year, including at least seven credits from Computer Science, four from Mathematics and Statistics, two from the Faculties of Arts and Social Sciences, and to include at least two credits chosen from 400-level courses.

Because the study of Computer Science is necessarily structured, students are required to select a course of study from one of five options in addition to those courses of the core program. The options are:

1. Software

2. Hardware
3. Theory of Computing
4. Scientific Applications
5. Management and Business Systems

Core Courses

All students enrolled in the Computer Science degree program are required to complete the following core courses:

First Year

Mathematics 69.102 and 69.117*;
Computer Science 95.102*, 95.105* and 95.106*.

Second Year

Mathematics 69.208* and 69.217*;
Computer Science 95.202*, 95.203* and 95.204*.

Third Year

Mathematics 69.311*;
Computer Science 95.304*, 95.384* and 95.385*.

Fourth Year

Computer Science 95.401* and 95.495*.

Program Options

Software Option

This option is intended for students whose interests include the design and implementation of large-scale software systems. Examples of such systems are language processors, operating systems and data management systems. Course requirements for the Software option are:

First Year

One full course in an experimental science.

Second Year

Mathematics 69.257*;
Computer Science 95.207*.

Third Year

One of Mathematics 69.304*, 69.309*, 69.351, 69.381* or Computer Science 95.386*;
Computer Science 95.302*, 95.303* and 95.310*.

Fourth Year

Computer Science 95.480*, 95.481* and 95.484*;
Two Computer Science half courses at the 300 level or above.

Hardware Option

This option is intended for students seeking to combine an interest in computing with an interest in electronics. It prepares students for careers in the design and construction of both large- and small-scale computer systems. Course requirements for the Hardware option are:

First Year

Physics 75.100.

Second Year

Mathematics 69.257*;
Engineering 97.251*.

Third Year

One of Mathematics 69.304*, 69.309*, 69.351*, 69.381* or Computer Science 95.386*;
Computer Science 95.303*, 95.310* and 95.367*;
Engineering 97.357*.

Fourth Year

Computer Science 95.461* and 95.480*;
Two Engineering or Computer Science half courses at the 300 level or above.

Theory of Computing Option

This option is intended for students with an interest in the theoretical aspects of Computer Science. While retaining a good number of practical courses, the option emphasizes the theoretical aspects, thus providing the student with a sound foundation for graduate studies. Course requirements for the Theory of Computing option are:

First Year

One full course in an experimental science.

Second Year

Mathematics 69.257*;
One of Computer Science 95.207* or 95.367*.

Third Year

Computer Science 95.302* and 95.386*;
One Computer Science half course at the 200 level or above.

Fourth Year

One of Mathematics 70.482*, Computer Science 95.483* or 95.486*;
Computer Science 95.480*, 95.484* and 95.485*;
Two Computer Science half courses at the 300 level or above.

Scientific Applications Option

This option is intended for students whose interest in computers centres around the applications of computers to science. It provides a strong framework of Computer Science courses to which additional Science courses may be added. Course requirements for the Scientific Applications option are:

First Year

Physics 75.100.

Second Year

One of Computer Science 95.207* or 95.367*.

Third Year

Mathematics 70.260;
Computer Science 95.303* and 95.386*.

Fourth Year

Two of Computer Science 95.387*, 95.405*, 95.481* or 95.484*;

Three Science or Computer Science half courses (or equivalent) at the 200 level or above.

Management and Business Systems Option

This option is intended for students whose interests include the application of computers to business. It is designed to prepare students for the careers in this field, with a combination of Computer Science courses and a strong component of courses selected from those offered by the School of Commerce. Course requirements for the Management and Business Systems option are:

First Year

Accounting 41.101* and 41.102*;

Economics 43.100.

Second Year

Management Studies 42.250*;

Mathematics 69.257*;

Computer Science 95.290* and 95.291*.

Third Year

Accounting 41.325*;

Management Studies 42.310*;

Computer Science 95.391*.

Fourth Year

One of Mathematics 69.351, 69.381* or Computer Science 95.386*;

One of Computer Science 95.405*, 95.480* or Management Studies 42.405*;

Two half courses in Accounting or Management Studies (offered by the School of Commerce) at the 300 level or above.

Counselling and Program Approval

Every student in the Bachelor of Computer Science degree program will be assigned a full-time faculty member who will act as a program adviser. Students are expected to seek counsel from their assigned advisers in such matters as selecting options and choosing elective courses. The advisers are responsible for approving both programs and course changes.

Combined Major and Honours B.A. and B.Sc. Programs

A Combined Major program must include a minimum of four credits in Computer Science. A Combined Honours program must include a minimum of six credits in Computer Science. These requirements can be satisfied as follows:

Computer Science and Mathematical Sciences

Students in this program augment the Computer Mathematics stream of the Mathematical Sciences program with additional Computer Science courses

to meet the minimum requirements as outlined above. Details of these Combined Major and Honours B.A. and B.Sc. programs are found on p. 217 and p. 399.

Computer Science and Physics

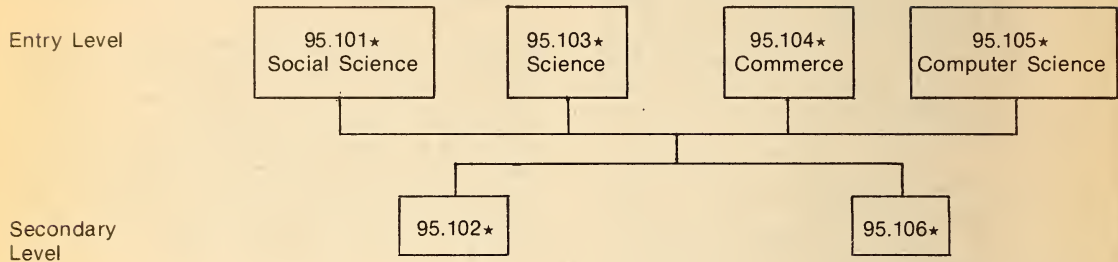
Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 417. The program features equal emphasis on Physics and Computer Science.

Computer Science and Integrated Science Studies

Students in the Faculty of Science may follow either Combined Major or Honours programs in Computer Science and Integrated Science Studies. These programs permit greater flexibility in course selection than either of the foregoing combined programs. Students select non-Science course sequences from Computer Science course offerings. See p. 390 for details.

Introductory Courses

The chart and the information that follows is provided to assist students in selecting introductory-level courses in Computer Science.

100-Level Computer Science Courses

Of the six 100-level half courses offered in Computer Science, four are introductory, 95.101*, 95.103*, 95.104*, and 95.105*. Of these, the first three are service courses designed primarily for students in Social Sciences, Science and Commerce respectively. Computer Science 95.105* is the introductory course required by B.C.S. students.

Normally, students will take only one of these four courses. The other 100-level courses, Computer Science 95.102* and 95.106*, are intended to prepare students for higher level courses (both are components of the B.C.S. core) and both have as a prerequisite one of the introductory half-courses, preferably Computer Science 95.105*. Students wishing to take Computer Science 95.106* who lack a knowledge of the programming language PASCAL because they chose an introductory course other than Computer Science 95.105*, will be required to familiarize themselves with PASCAL. Special, short, non-credit courses on PASCAL are offered during the first week of lectures.

Computer Science Course Selection

The following table is designed primarily for B.C.S. students, to assist in both option and course selection. Since it is organized by specialization option, the table will also be useful to students in Combined Major and Honours programs as well as to students seeking a concentration in Computer Science within some other degree program. The table contains only Computer Science courses beyond the 100 level and does not include those in the B.C.S. core, (see p. 56). Entries in each column signify:

- X — required course within the option
- O — specified in a selection list within the option
- * — unspecified course within the option but of particular interest

Notes:

1. This chart does not show 100-level courses or B.C.S. core courses beyond the 100 level, of which the latter are relevant to students planning other programs of studies.
2. Certain courses are restricted with respect to the credit allowable for them towards a B.C.S. degree and also towards Computer Science credits in Combined programs. In particular, credit will not be allowed for both Computer Science 95.101* and 95.103*, nor for Computer Science 95.201* and 95.303*, nor for Computer Science 95.290* and 95.310*, nor for Computer Science 95.366* and 95.386*.

Course	Option				
	Software	Hardware	Theory of Computing	Scientific Applications	Management and Business Systems
95.201* Introduction to Systems Software	—	—	*	—	—
95.207* Programming Languages II	X	*	O	O	*
95.290* Introduction to Business Information Systems	—	—	—	—	X
95.291* Quantitative Applications of Computers in Business	—	—	—	—	X
95.302* Compiler Construction	X	*	X	*	—
95.303* Real-Time Computing Systems	X	X	*	X	—
95.310* Systems Analysis	X	X	*	*	*
95.366* Computer Applications	—	—	—	—	—
95.367* Switching Circuits	*	X	O	O	—
95.386* Numerical Analysis	O	O	X	X	O
95.387* Mathematical Software	*	—	*	O	—
95.391* Business Data Processing Systems	*	—	—	—	X
95.405* Discrete Simulation and Its Application	*	*	*	O	*
95.457* Introduction to Computer Architecture	—	*	—	*	—
95.461* Microcomputer Systems	*	X	*	*	—
95.480* Introduction to Software Engineering	X	X	X	X	*
95.481* Software Engineering Project	X	*	*	O	*
95.483* Topics in Applied Logic	—	—	O	—	—
95.484* Design and Analysis of Algorithms	X	*	X	O	*
95.485* Theory of Automata	*	—	X	—	—
95.486* Numerical Analysis	—	—	O	O	—

Academic Standing and Graduation

Information concerning academic standing in the B.C.S. program and graduation from the B.C.S. program is available from the Director of the School.

Appropriate faculty regulations, either Science, or Arts, apply to students undertaking Combined Computer Science programs.

Courses Offered

Some of the following Computer Science courses are cross-listed from other parts of the Calendar. In every such case, only one course is actually offered and the two numbers are alternate identifiers for this single course; students should register in such a course under the Computer Science number only if they are not in the Department offering the course.

Note:

In all courses with programming assignments students usually find it necessary to be on campus at other than the scheduled lecture periods to make use of computing facilities.

Computer Science 95.101*

Introduction to Computers for the Social Sciences

This course is intended to give students in Arts and Social Sciences an understanding of programming logic, the ability to write algorithms and flowcharts, a working knowledge of FORTRAN IV, and experience in using SPSS as an example of a library program. Topics covered include: Simple concepts of how a computer works and technicalities of using the terminal; Logic (algorithms and flowcharts); Introduction to FORTRAN — conditionals, branching, logical IF's, DO loops, lists, tables, subscripts, dimensioning, input and output, subroutines; SPSS. Credit will not be given for both this course and Computer Science 95.103* or Engineering 94.165. This course cannot be taken for credit by students in Engineering or Science. Day division, First term and Evening division, Second term: Lectures three hours a week.

Computer Science 95.102*

Introduction to Computers

An introduction to the organization and operation of computer systems is given based on the FACET pseudo-computer. Concepts of assemblers are explained using the FACET assembler. Lectures and programming exercises cover such topics as: addressing modes, subroutine calling conventions, internal data representation. Credit will not be given for this course and for Engineering 94.165. (Also listed as Science 60.202*.)

Prerequisites: Computer Science 95.101* or 95.103* or 95.104* or 95.105*.

Day division, First term and Day and Evening divisions
Second term: Lectures three hours a week.

I. Reichstein

Computer Science 95.103*

Introduction to Scientific Computing

A first course in computer programming primarily for students in the Faculty of Science. Introduction to computers and algorithms. Use of the Carleton time sharing system. Introduction to FORTRAN programming through examples taken from mathematics and science. Basic procedures: summing, sorting, looping. Iterative solutions to problems. Non-numeric programming. Random numbers. Simulation of simple physical systems. The computer system: inside the computer. Use of the batch system. Efficient and structured programming. (Also listed as Science 60.200*.)

Prerequisites: One of Mathematics 69.107*, 69.117*, 69.127*, 69.102, 69.112, which may be taken concurrently.

Credit will not be given for both this course and Computer Science 95.101* or Engineering 94.165.

Day and Evening divisions, First term: Evening division
Second term: Lectures three hours a week.

Computer Science 95.104*

Introduction to Data Processing

This course is designed to give students an understanding of data processing by teaching COBOL and illustrating its use in detailed case studies. Besides COBOL, emphasis is placed on methods of analysis, specification and design. The following topics are covered: review of operational methods in data processing, implementation and design methods; the COBOL language; sequential file processing including file design, creation, update and backup; report generation, sorting and merging techniques, tape file maintenance; direct access file processing; introduction to data base techniques. Programming assignments in COBOL. (Also listed as Science 60.206*.)

Day and Evening divisions, First term: Day division
Second term: Lectures three hours a week.

Computer Science 95.105*

Introduction to Programming

A first course in computer programming designed for students who wish to specialize in Computer Science. The emphasis is on a structured approach to the design of programs. The language of instruction is PASCAL. Topics include: programming style, documentation, and testing, and a variety of non-numeric applications — text formatting, graphical techniques.

Day and Evening divisions, First term: Lectures three hours a week.

Computer Science 95.106*

Computer Applications

A continuation of Computer Science 95.105* designed to give students more programming experience. Applications of computers to various problems using

PASCAL including both non-numeric and numeric techniques. Topics include: solution of equations, integration, interpolation, language translation, interpretation techniques.

Prerequisite: Computer Science 95.105*, or alternatively one of Computer Science 95.101*, 95.103*, 95.104* and a rudimentary knowledge of PASCAL. Evening division, First term and Day division, Second term: Lectures three hours a week.

Computer Science 95.201*

Introduction to Systems Software

Methods and principles underlying systems software organization through the medium of assembler programming on the PDP-11 Emulator. Subroutines, co-routines, macros and parameter passing; reentrancy and recursion. Input/output processing using channels and interrupts; overlap of input/output and computation. This course is intended primarily for students in Computer Science programs. It is recommended that students not take both Computer Science 95.201* and 95.303*.

Prerequisites: Engineering 94.165; or Computer Science 95.102*.

Evening division, Second term: Lectures three hours a week.

Computer Science 95.202*

Advanced Programming Techniques

A course designed to provide in-depth experience in the design and construction of computer programs involving data structures. The language of instruction is PASCAL. The data structures, including stacks, queues, lists, trees, and records are presented from the viewpoint of the advanced programming concept known as a data type.

Prerequisite: Computer Science 95.106*.

Day division, Second term: Lectures three hours a week.

Computer Science 95.203*

Computer Organization

A thorough treatment of computer system organization. Micro, mini, and mainframe architectures. Instruction sets and addressing modes. Input/output methods and devices. Micro-coded interpreters. Operating system functions, virtual I/O and memory management techniques.

Prerequisite: Computer Science 95.102* or Engineering 94.165.

Day division, First term: Lectures three hours a week.

Computer Science 95.204*

Programming Languages I

A course intended to increase the breadth and depth of students' understanding of popular programming languages. Emphasis is placed on COBOL and FORTRAN with appropriate programming exercises in both of these languages. This course is intended for Computer Science students lacking courses in these languages. Credit will not be given for this course and

Computer Science 95.101*, 95.103* or 95.104* or Engineering 94.165.

Prerequisite: Computer Science 95.105*.

Day division, Second term: Lectures three hours a week.

Computer Science 95.207*

Programming Languages II

A course intended to increase the breadth and depth of students' understanding of modern and specialized programming languages. Programming exercises are chosen to give students hands on experience with APL and LISP.

Prerequisite: Engineering 94.165 or one of Computer Science 95.101*, 95.103*, 95.104* or 95.105*.

Day division, First term: Lectures three hours a week.

Computer Science 95.290*

An Introduction to Business Information Systems

This course develops an understanding of computer technology as it applies to business. The course describes various hardware and software technologies in terms of their impact on business systems. Typical computer applications are discussed to illustrate how the computer may be used in a business environment. Methods for specifying and implementing business information systems are introduced. (Also listed as Management Studies 42.290*.)

Prerequisites: Computer Science 95.104* or 95.204* and Accounting 41.100 (or 41.101* and 41.102*).

Day and Evening divisions, First and Second terms: Lectures three hours a week.

Computer Science 95.291*

Quantitative Applications of Computers in Business

This course introduces the computer as a problem-solving tool in business. The interactive language APL and various program packages such as SPSS are used to solve problems in finance, marketing and accounting. Typical areas from which problems are selected are: questionnaire processing, time series analysis, budgeting, PERT/CPM, decision trees, portfolio analysis, inventory control and simulation. (Also listed as Management Studies 42.291*.)

Prerequisites: One of Computer Science 95.101*, 95.104*, or 95.105*, and Economics 43.220 (or Mathematics 69.257*) and Management Studies 42.250*. (The latter two may be taken concurrently.)

Day division, First term: Lectures three hours a week.

Computer Science 95.302*

Compiler Construction

Finite state machines and scanners. Grammars and parsers (current state of the art LR(K) parsers are emphasized). Code generators for handling array constructs, PL/1 type structures, procedures, functions, control structures such as IF statements, DO loops, case statements, etc. Optimization techniques. Programming assignments involve writing parts of a

compiler in a high-level language.

Prerequisites: Computer Science 95.102* and 95.202*, or alternatively 95.102*, 95.105* and 95.384*.

Evening division, First term: Lectures three hours a week.

Computer Science 95.303*

Real-Time Computing Systems

An introduction to the use of minicomputers as real-time, interactive systems, using the PDP-11 as the primary example. Computer organization: structure, representation of instructions, numbers and characters; addressing modes, arithmetic and logical operations. Programming techniques: assembly language coding and interfacing to high level languages, input/output: via program control, priority and vectored interrupts, and direct memory access. Peripherals: teletype, register, programmable clock, analog/digital converters, interactive graphics processor. Applications to digital signal processing and data communications. (Also listed as Engineering 94.303*.)

Prerequisite: Engineering 94.165 or Computer Science 95.102* or previous experience in assembly language. Text: Eckhouse and Morris, *Minicomputer Systems: Organization, Programming, and Applications*.

Day division, Both terms: Lectures two hours a week, laboratory two hours a week. Limited enrolment. E.L. Sigurdson

Computer Science 95.304*

File Structures and Data Bases

Introduction and definitions of data base systems. File system organizations: sequential, indexed-sequential, direct access and multiring files, Hybrid organization. Hardware and its parameters: mechanical storage, magnetic tapes, rotating magnetic storage and large capacity storage devices. Physical implementations: hierarchical and network structures, storage allocation. System evaluation: estimates of system usage, storage requirements and cost-benefit comparison. (Also listed as Engineering 94.304*.)

Prerequisite: One of Computer Science 95.201*, 95.203* or 95.303*.

References: Knuth, *The Art of Computer Programming, Volume III: Searching and Sorting; the Codasyl Report*.

Day division, Second term: Lectures three hours a week.

S.A. Mahmoud

Computer Science 95.310*

Systems Analysis

Introduction to the concepts and techniques of problem definition and analysis. Various approaches to system identification, specification and presentation are discussed. Students work in teams to test their analysis skills on case studies of information systems. Process specification: decision tables, flow diagrams, state transition techniques, specification languages. Data and file description: forms-oriented techniques, languages. Document description. Phases in a project:

feasibility study, input/output analysis and design, document and file design, system design implementation and project control. The course emphasizes applications in computer-based information systems, but the techniques used are of wider applicability. (Also listed as Engineering 94.310*.)

References: Gore and Stubbe, *Elements of Systems Analysis*.

Prerequisite: A full First-year credit in Computer Science.

Day division, Second term: Lectures three hours a week.

J.S. Riordon

Computer Science 95.366*

Computer Applications

Analysis of engineering problems with the use of the digital computer including mathematical modelling, organization of the equations and methods of solution using analytical and numerical methods and analysis of errors associated with numerical methods. Topics in numerical methods include: solution of single algebraic and transcendental equations and systems of linear and non-linear equations; determination and use of eigenvalues and eigenvectors; curve fitting using least squares and difference tables; numerical integration, differentiation; solution of ordinary and partial differential equations. The use of the computer is an essential part of the course. (Also listed as Engineering 94.366*.) Credit is not allowed for both this course and Computer Science 95.386*.

Prerequisites: One of Computer Science 95.103*, 95.204* or Engineering 94.165, and Mathematics 69.201 or 69.208*.

Text: Southworth and Deleeuw, *Digital Computation and Numerical Methods*.

Evening division, Second term: Lectures three hours a week.

Computer Science 95.367*

Switching Circuits

Boolean algebra, gates coding, combinatorial circuits, canonical forms, Karnaugh maps, Quine-McClusky algorithm. Number systems: binary, binary coded decimal, two's complement. Combinatorial arithmetic. Sequential machines: counters, sequential design given a state table, analysis, state table derivation, state minimization, state assignment. Iterative networks, more combinatorial arithmetic. Asynchronous circuits, races, hazards, fault detection. (Also listed as Engineering 94.367*.)

Prerequisites: Engineering 97.251* or Physics 75.236* or permission of the Department. (Precludes additional credit for Computer Science 95.466.)

Text: Lee, *Digital Circuits and Logic Design*.

Day division, Second term: Lectures three hours a week, laboratory three hours alternate weeks.

B.A. Bowen

Computer Science 95.384*

Data Structures and Algorithm Analysis

Review of basic data structures such as stacks, queues, and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs: representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Mathematics 69.384*.)

Prerequisites: A Second-year Mathematics course and Computer Science 95.202*. (For 1980-81 only, one of Computer Science 95.201* or 95.207* will be accepted in lieu of 95.202*.)

Day division, First term: Lectures three hours a week and one hour tutorial.

W.H. Cunningham, F. Fiala

Computer Science 95.385*

Discrete Structures and Applications

Algebraic structures; lattices, Boolean algebra elements of the theory of directed and undirected graphs; combinatorics; Polya theory of enumeration languages over an alphabet; switching circuits, optimization and complete design, algebraic codes, flow charts, connectivity, minimal paths. Some of the assigned work in this course requires use of the computer. (Also listed as Mathematics 70.385*.)

Prerequisites: Mathematics 69.218* or 70.210 or 69.311*. Precludes additional credit for Mathematics 70.310.

Day division, Second term: Lectures three hours a week and one hour tutorial.

C.W.L. Garner

Computer Science 95.386*

Numerical Analysis

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Mathematics 69.386*.)

Credit is not allowed for both this course and Computer Science 95.366*.

Prerequisites: Computer Science 95.103*, or 95.106* and Mathematics 69.102 (or 69.207*) and 69.112 (or 69.217*) or 69.201, 69.202 or 69.203.

Day division, First term: Lectures three hours a week and one hour tutorial.

A. Smith, E.J. Norminton

Computer Science 95.387*

Mathematical Software

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems e.g., linear systems, non-linear systems, optimization, or differential equations.

A substantial part of the assigned work in this course requires use of the computer. (Also listed as Mathematics 69.387*.)

Prerequisite: Computer Science 95.366* or 95.386*.

Day division, Second term: Lectures three hours a week and one hour tutorial.

E. Norminton, G. Zelmer

Computer Science 95.391*

Business Data Processing Systems

The purpose of this course is to develop the skills necessary to participate in the construction of business data processing systems. Computer Science and non-Computer Science students will form project teams to design and implement a particular system. Lectures are based on case studies and seminars. Student projects are drawn, where possible, from actual problem areas in the business community. Typical projects include: inventory control, payroll, general ledger, project cost accounting, simulation, information retrieval, computer auditing. (Also listed as Management Studies 42.391*.)

Prerequisites: Computer Science 95.290* or 95.310*.

Day division, Second term: Lectures three hours a week.

Computer Science 95.401*

Operating Systems

A unifying view of existing operating systems and a basis for the design of future ones. Programming techniques and algorithms for handling concurrency; structure and implementation of the nucleus of an operating system to handle short-term scheduling; performance implications of scheduling and memory management strategies; deadlock problems; special problems as time permits including distributed processing; protection, recovery, integrity and reliability. Assembler and/or concurrent PASCAL programming assignments.

Prerequisite: One of Computer Science 95.201* or 95.303*, or equivalent experience.

Text: R.C. Holt et al, *Structured Concurrent Programming with Operating Systems Applications*.

Reference: Habermann, *Introduction to Operating System Design*.

Second term: Lectures three hours a week.

E.L. Sigurdson

Computer Science 95.405*

Discrete Simulation and its Applications

Simulation as a problem-solving tool. Simulation modelling perspectives. Probability concepts in simulation. Network modelling, simulation and problem solving using SLAM. Discrete event simulation using SLAM. Analysis of simulation output. Simulation languages. (Also listed as Engineering 94.405*.)

Prerequisite: Fourth-year registration or permission of the Department.

Text: Pritsker and Pegden, *Introduction to Simulation and SLAM*.

References: Gordon, *Systems Simulation*; Emshoff, Sisson, *Design and Use of Computer Simulation Models*.

Second term: Lectures three hours a week, problem analysis one hour a week.

H.I. El-Zorkany

Computer Science 95.457*

Introduction to the Architecture of Computing Systems

The course begins with a comprehensive historical review of computing machines from early history through Pascal and Babbage to present day architectures with emphasis on the evolution of concepts, the influence of technology and the techniques evolved to increase performance. The second major portion of the course presents a structured view of methodologies as they currently exist (for gate, register and processor design) with particular stress on their limitations. Detailed analysis and design are then undertaken for controllers, processors and memory systems, using existing machines as examples. A range of such component implementations are extended for enhanced performance leading to discussions of super computers. Computer classification schemes are examined. The course concludes with a discussion of systems of computers and related problems. (Also listed as Engineering 94.457*.)

Prerequisite: Computer Science 95.367* or 95.466*.

Text: Hayes, *Computer Architecture and Organization*.
Second term: Lectures three hours a week.

Computer Science 95.461*

Micro-Computer Systems

Introduction to micro-computer architecture. Characteristics and applications, major features of current systems. Techniques of micro-programming, examples of input/output, use of subroutines, arithmetic subroutines, logical operations, delays, time outs, holds, etc., discussion of programming languages and assemblers. Design studies are selected from calculators, interface controllers, intelligent terminals, graphics, compilers, etc., economics and technical decisions in selecting and implementing a micro-computer system. (Also listed as Engineering 94.461*.)

Prerequisite: Computer Science 95.367* or 95.466*.

Text: Klingman, *Microprocessor System Design*.

References: Assigned papers and notes.

Day division, Second term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.
B.A. Bowen

Computer Science 95.466*

Switching Circuits

Boolean algebra, gates, coding, combinatorial circuits, canonical forms, Karnaugh maps, Quine-McClusky. Number systems: binary, binary coded decimal two's complement. Combinatorial arithmetic. Sequential machines: counters, sequential design given a state table, analysis, state table derivation, state minimization, state assignment. Iterative networks, more com-

binatorial arithmetic. Asynchronous circuits, races, hazards fault detection. (Also listed as Engineering 94.466*.)

Prerequisites: Engineering 97.251* or Physics 75.236* or permission of the Department.

Text: Lee, *Digital Circuits and Logic Design*.

Evening division, First term: Lectures three hours a week, laboratory three hours alternate weeks.

J. Knight

Computer Science 95.480*

Introduction to Software Engineering

This course introduces students to the problems and methods of specifying, designing, and producing correct, structured, and modular software. Topics to be discussed include: programming style, structured programming, top down and bottom up programming, chief programmer team concepts, information "hiding" approaches, table-driven techniques, decision tables, debugging strategies, and techniques for proving programs correct. (Also listed as Engineering 94.480*.)

Prerequisite: One of Computer Science 95.202*, 95.303* or 95.384*.

References: Kernighan and Plauger, *The Elements of Programming Style*; McGowan and Kelly, *Top Down Structured Programming Techniques*.

Day division, First term: Lectures three hours a week.

W.R. LaLonde

Computer Science 95.481*

Software Engineering Project

Students participate in a team project to develop a small piece of stand-alone software in an organized and structured fashion. Non-numeric applications are emphasized. All phases of the project are considered equally important: specification, design, implementation, testing and documentation. (Also listed as Engineering 94.481*.)

Prerequisite: Computer Science 95.480* or concurrent registration.

Day division, First term: Tutorial three hours a week.

E.L. Sigurdson

Computer Science 95.483*

Topics in Applied Logic

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic. (Also listed as Mathematics 70.483*.)

Prerequisite: Mathematics 70.210 or Computer Science 95.384* or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

J.C. Poland

Computer Science 95.484*

Design and Analysis of Algorithms

Design techniques: divide and conquer, backtracking, dynamic programming, search methods. Algorithms for graph problems, optimization problems, algebraic

problems. Lower bounds and the P-NP question. (Also listed as Mathematics 70.484*.)

Prerequisite: Computer Science 95.384* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

W.H. Cunningham

Computer Science 95.485*

Theory of Automata

Finite automata and regular expressions, properties of regular sets. Context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Comsky hierarchy. Undecidability, intractable problems. Some of the assigned work in this course requires the use of the computer. (Also listed as Mathematics 70.485*.)

Prerequisite: Computer Science 95.385* or Mathematics 70.310 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

F. Fiala

Computer Science 95.486*

Numerical Analysis

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. Some of the assigned work in this course requires use of the computer. (Also listed as Mathematics 70.486*.)

Prerequisites: Permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

J.D. Dixon

Computer Science 95.495*

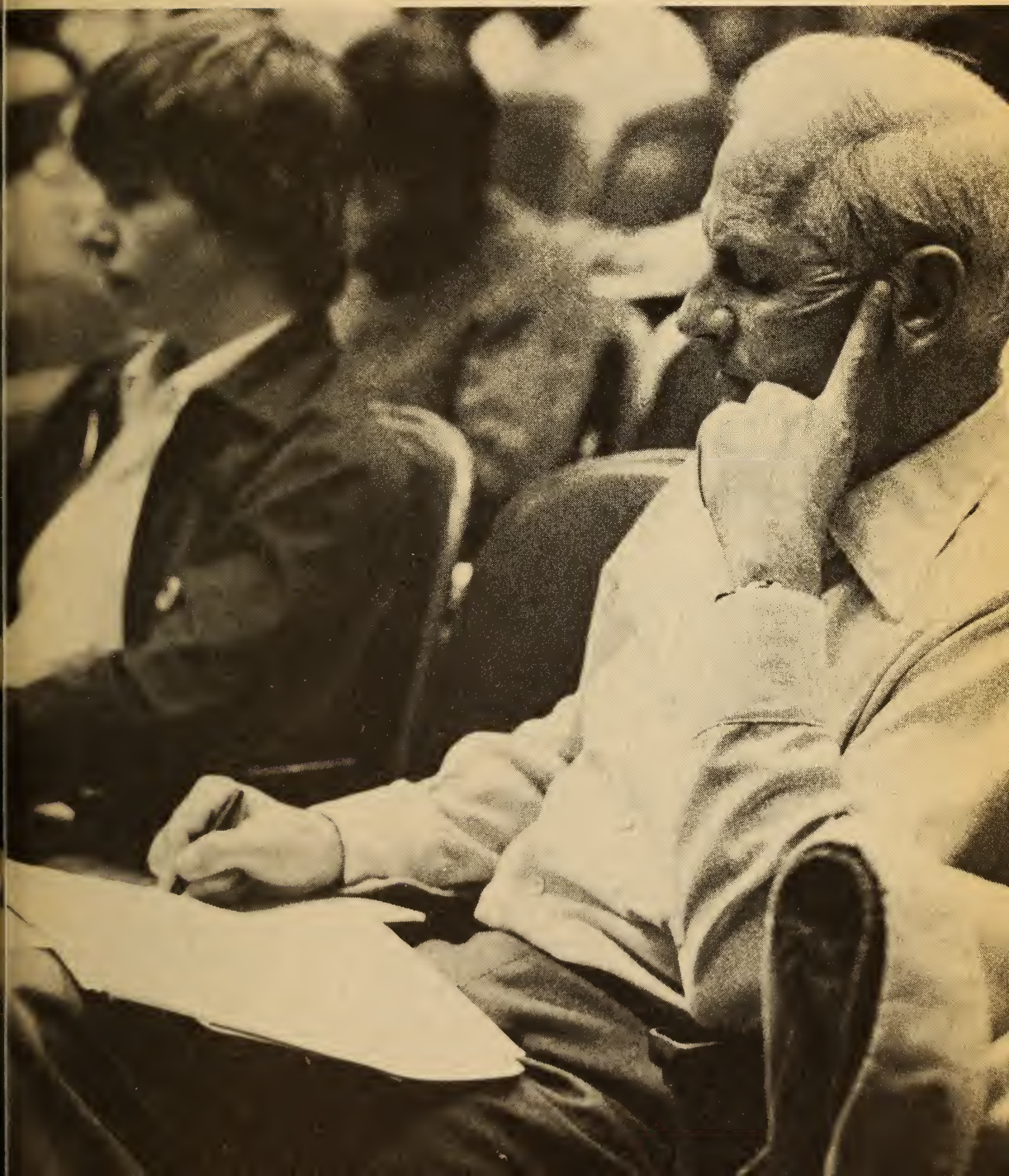
Honours Project

Consists of a written report on some topic in the field of Computer Science.

Prerequisite: Fourth-year registration in Computer Science.



School of Continuing Education





School of Continuing Education

Director, To be announced
June R. Landsburg, *Associate Director*
Keith C. Alnwick, *Registrar*
Earl P. Rooney, *Extension and Professional Programs*
Patrick Woodsworth, *Academic Programs (Acting)*

The School of Continuing Education is a recently created unit designed to co-ordinate and develop both existing and new activities in adult, part-time and non-traditional education, in conjunction with other departments at Carleton.

The offices of the Director are located in Room 1513, Arts Tower (231-7537). Administrative operations, including registrarial services for both Special students and Extension (non-credit) students, are situated in Room 302, Administration Building (231-6660).

Student Classifications

As outlined on p. 14, there are several distinct student classifications at Carleton. The three most basic are discussed in detail below. The distinction is made on the basis of whether a student has been formally admitted to a degree program, *not* on the basis of whether he or she is studying part-time or full-time.

Degree students are those who have been admitted to, and are enrolled in, a degree program, whether graduate or undergraduate, on either a full-time or part-time basis.

Special students are those who have not been admitted to a degree program but who are taking degree-credit courses to qualify for admission, to improve professional or vocational qualifications, for transfer credit or for personal interest.

Extension students are those enrolled for non-credit courses and/or workshops offered through the Extension Division. Detailed information regarding all non-credit programming offered through the Extension Division can be obtained by telephoning Continuing Education at 231-6660.

Information for Part-Time Students

Information of particular interest to part-time students is contained in various sections of this calendar. The Carleton Glossary (p. 9), the Academic Year (p. 10), General Information (p. 13), the Course Numbering System (p. 15), the University Office Guide (p. 17), Student Services (p. 20), and General Regulations (p. 27) are all sections of primary interest.

Current or prospective part-time Arts or Social Science degree students are encouraged to consult Faculty regulations outlined on pp. 83-94.

Current or prospective part-time Science degree students are encouraged to familiarize themselves with Faculty of Science regulations found on pp. 355-362.

Current or prospective Computer Science degree students are encouraged to consult the entry for the School, pp. 55-60.

Further information may be obtained from appropriate Faculty Registrar's Offices. (See University Office Guide p. 17 for telephone numbers and locations.)

Special Students

As indicated above, Special students are those registering in degree-credit courses without having been formally admitted to a university degree program.

Special students enrol in the same courses as students in degree programs and may take classes in both Day and Evening divisions.

All registrarial services for Special students are provided through Continuing Education, Room 302 Administration Building, 231-6660.

Admission Status

Courses completed by a Special student will not be credited towards a degree program until formal application for admission is made and the student is officially admitted to the University as an undergraduate (either part-time or full-time).

Special students may be admitted to degree study upon indicating, through academic achievement at Carleton, a reasonable probability of future academic success. However, previous post-secondary studies will be taken into consideration at the time an application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions before attempting to qualify for admission on the basis of Special student studies.

Normally, in the Faculty of Arts or the Faculty of Social Sciences, a Special student will be admitted after passing at least four full courses with a C- standing or higher in at least two full courses or equivalent.

Normally, in the Faculty of Science, a Special student will be admitted after passing at least four *approved* full courses with a C- standing or higher in at least two full courses or equivalent.

A Special student seeking admission who has completed *more* than four courses: **(a)** must meet the requirements within the previous six full courses preceding formal application for admission; and **(b)** may not present more than two supplemental or special supplemental examinations in meeting the requirements for admission.

The number of courses required for admission to a degree program may be reduced if the Special student is able to present a sufficiently higher grade average. Thus, a student who obtains a B- grade average or better in three successive courses or A- grade average in two successive courses is encouraged to make formal application for admission.

For a person with some university experience (or the equivalent), the number of courses required for admission to degree study may differ from that indicated above. Advice in this regard may be obtained from the Admissions Office upon formal application.

A student admitted to an undergraduate degree program will normally receive retroactive credit standing in courses successfully completed at Carleton as a Special student.

Special students intending to pursue a degree program in the Faculty of Science, should note that, upon admission, credit may be granted for not more than seven full courses, four of which must meet the First year promotion requirements.

Admission as a Mature Matriculant

Persons who lack the normal entrance requirements as published in the Undergraduate Calendar but who are twenty-one years of age or over by December 31 of the year in which they wish to enrol, and have been away from full-time studies for a minimum of two years, may receive consideration for admission to a degree program.

Any individual who meets the age requirement is technically eligible to be considered for admission as a Mature Matriculant. This category, however, is designed for those individuals who do not meet normal admission requirements but who would probably be successful in university studies.

Mature Matriculants are normally admitted to the First year of an undergraduate degree program. Students who are seeking admission to either the Faculty of Science or the Faculty of Engineering, but who do not hold the necessary prerequisites, may be required to take Qualifying University year courses in addition to the regular program.

All applicants are required to submit proof of age with their application for admission.

Special students who meet the age requirement will normally be considered for admission as Mature Matriculants if, and only if: (a) they have obtained a grade of C- or better in at least one full course (or equivalent); and (b) are eligible to continue as Special students.

Eligibility to Register

Returning Special students must pass three of their previous five full credits (or equivalent) with a C- standing or higher in at least one full course (or equivalent) to be eligible to receive permission for further registration.

Without documentation to the contrary, a grade of *Abs* (Absent) is judged equivalent to a grade of *FNS* (Failure, no supplemental privileges) for the purpose of determining eligibility to continue as a Special student.

Course Load

Special students may enrol in a maximum of two full courses (or equivalent) per academic session.

In exceptional circumstances, a Special student may enrol in three full courses (or equivalent) in the Winter session provided permission is first obtained from Continuing Education and a C average has been obtained in a minimum of two full courses (or equivalent) completed in the previous session attended.

Special students may enrol in four or five full courses provided any of the following conditions prevail:

1. the student is enrolled full-time in a degree program at another institution and can present a Letter of Permission authorized by an appropriate official of that institution; or
2. the student holds an undergraduate degree from a recognized institution and wishes to pursue further study for professional development or in preparation for entry into graduate study; or
3. the student, on the recommendation of a department, has to upgrade undergraduate deficiencies prior to consideration for admission to a Carleton graduate program. Such students also require the permission of the Faculty of Graduate Studies and Research and are advised to consult the Graduate Studies and Research Calendar.

Course Change and Course Withdrawal

Special students wishing to make a change in their registration must use the appropriate form provided by Continuing Education.

Course changes must be made by the deadline dates designated in the Academic Year, (see pp. 10-12), and must be approved by the department in which the course is offered. Changes include withdrawal, section changes, as well as changes of status from credit to audit or vice versa.

Students who are withdrawing from a course or courses, or entirely from the University, must notify the Continuing Education office, either on the specific form designated for that purpose and available from that office, or by letter.

The official date of withdrawals for academic notice is the date on which the notification is received in the Continuing Education office. Partial refund of fees for students withdrawing from a course or courses, but not entirely from the University, will also be calculated as of that date. In order to obtain a partial refund of fees, a student who withdraws entirely from the University must also return his or her identity card to the

Continuing Education office. The date of receipt of the identity card is the effective date for determination of partial refund of fees.

Students *must* withdraw from a course or courses or from the University on or before the appropriate last date for withdrawal as shown in the Calendar for the Academic Year (See pp. 10-12). The withdrawal, along with the date of withdrawal, will be entered on the student's transcript as *Wdn*, which is defined as "Withdrawn in good standing. No academic credit."

It is not possible to withdraw from a course or courses, or from the University *after* the appropriate designated last date for withdrawal, and no partial refund of fees is available unless all required procedures, as outlined above, have been completed by the student on or before the appropriate designated last date for withdrawal.

For complete details about partial refund of fees see p. 47 (Fees).

Notes:

1. The responsibility for taking all steps necessary for withdrawal is entirely that of the student. Ceasing to attend classes, or informing an instructor of intent to withdraw *does not* constitute withdrawal.
2. A student who withdraws from a course retains no academic credit for any part of that course.

Course Selection

Persons wishing to be admitted eventually to a degree program are advised to note the specific faculty requirements for First year students as listed in this calendar. Special students who have not completed Senior Matriculation or equivalent standing may have to upgrade by enrolling in courses at the Qualifying University year level.

Special students are strongly encouraged to consult directly with departments when selecting specific courses of study.

Supplemental and Special Examination Privileges

A Special student registered in one, two or three courses, who fails only one course, may write one supplemental. Supplemental privileges will not be granted to students who fail more than one of these courses.

A Special student registered in four courses may write one supplemental and one grade-raising examinations, only, or two grade-raising examinations.

A Special student registered in five or more courses may write two supplementals or two grade-raising examinations.

Supplemental examinations written by Special students will be graded according to the supplemental regulations of the faculty in which the course is given.

Supplemental privileges will not be granted to a full-time Special student who does not pass at least three courses in the spring.

A Special student who wishes eventually to enrol in a degree program of a faculty at Carleton University is strongly encouraged to pay particular attention to the supplemental examination regulations for that faculty.

Special students are eligible to write deferred final examinations under the conditions indicated on p. 44.

Special students must make application for supplemental and special examinations at the Continuing Education office by the published deadlines.

Appeals

A Special student has the right to appeal any decision relating to the application or interpretation of academic regulations made by Continuing Education.

Appeals must be made in writing and should be submitted to the Secretary, Special Student Policy and Appeals Committee, c/o School of Continuing Education, Administration Building, Carleton University.

Financial Assistance

Special students interested in obtaining financial assistance are advised to contact the Student Awards Office at 231-3735.

Ontario residents should apply for financial aid from the Ontario Student Assistance Program (OSAP). The new program is made up of four individual plans: Ontario Study Grant Plan, Canada Student Loans Plan, Ontario Student Loans Plan and Ontario Special Bursary Plan.

Ontario Study Grant Plan (OSG)

This plan can provide grants to assist post-secondary study for up to eight terms. In this way, the grant plan will cover many students for their first four years of full- or part-time post-secondary study. Eligible students can receive this grant without having to borrow money first.

Canada Student Loans Plan (CSL)

For qualified applicants, this plan provides an interest free loan for post-secondary study. To be eligible applicants must be following at least sixty percent of a full course load for a period not less than twenty-six weeks. The amount of loan will be based on calculated financial need.

Ontario Student Loans Plan (OSL)

For full-time students whose calculated financial needs are not fully covered by the Canada Student Loans Plan, applications for OSAP assistance may be supplemented automatically by the Ontario Student Loans Plan. This provincial loans plan also helps part-time students, or students enrolled in some short courses which are not covered by the other plans. Students are not obliged to borrow the full amount of the authorized loan.

Ontario Special Bursary Plan (OSBP)

The province of Ontario provides non-repayable bursaries to help Ontario students who are on social assistance, are unemployed or have a low family income, and who are taking up to three courses. Students may not, at the same time, receive financial assistance from OSG, CSL or OSL. If eligible for OSBP, the student may receive a bursary to cover tuition and other compulsory fees, book and equipment and local transportation expenses, in addition to a possible supplementary grant towards any additional costs such as babysitting.

Part-Time Scholarships

Carleton offers a number of scholarships tenable at the University, to students formally enrolled in Carleton degree programs, who have completed the equivalent of at least five courses through part-time studies at the University and who have demonstrated a high potential for university studies. This is one reason why it is particularly desirable for Special students to gain early admission to a degree program. To be eligible the candidate must have maintained a high academic standing and be registered as a part-time student. *Value:* Academic tuition fee for one or more courses (non-transferable). Students must apply through the Awards Office to be considered for a part-time scholarship.

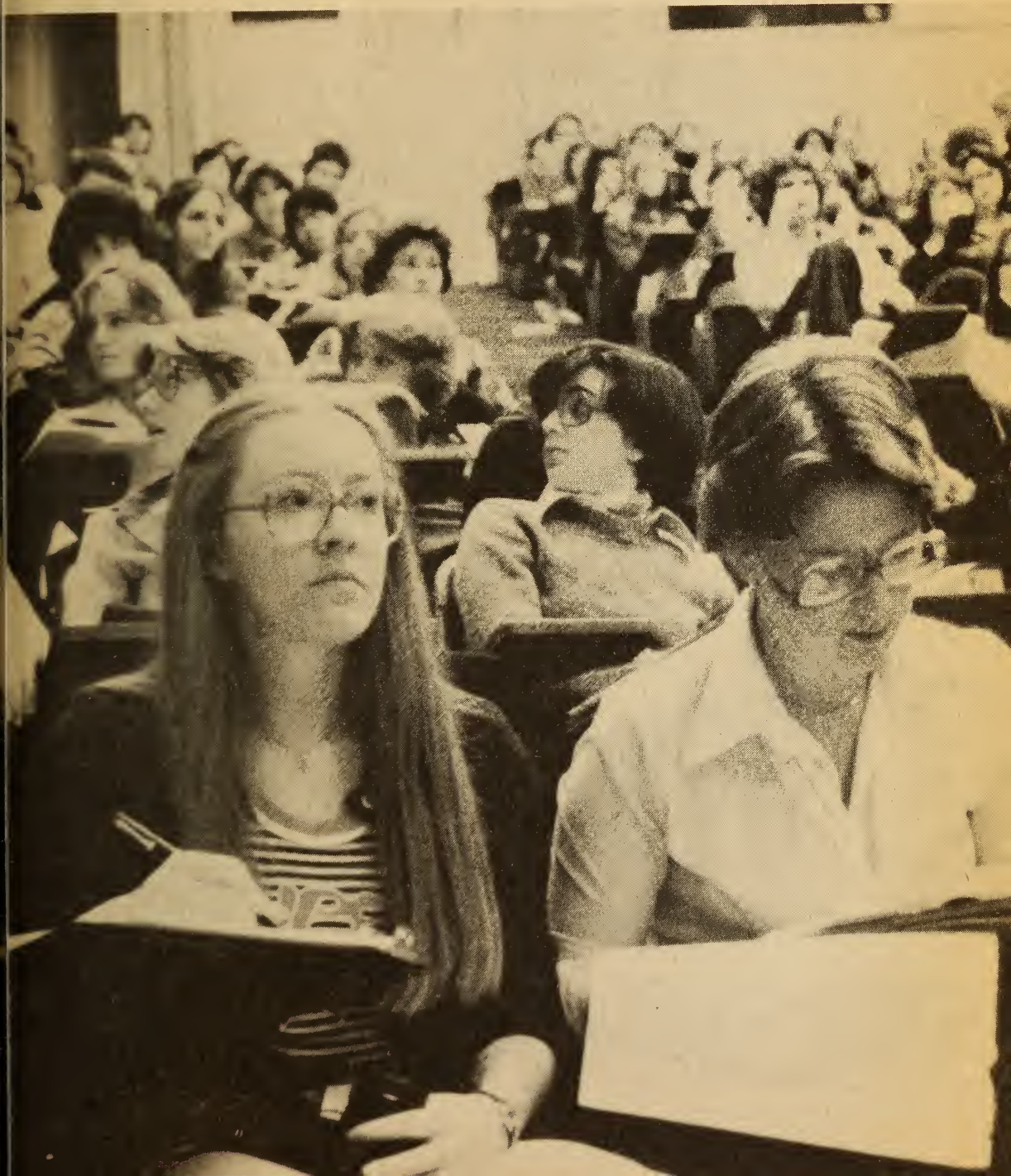
Transfer Credits to Another University

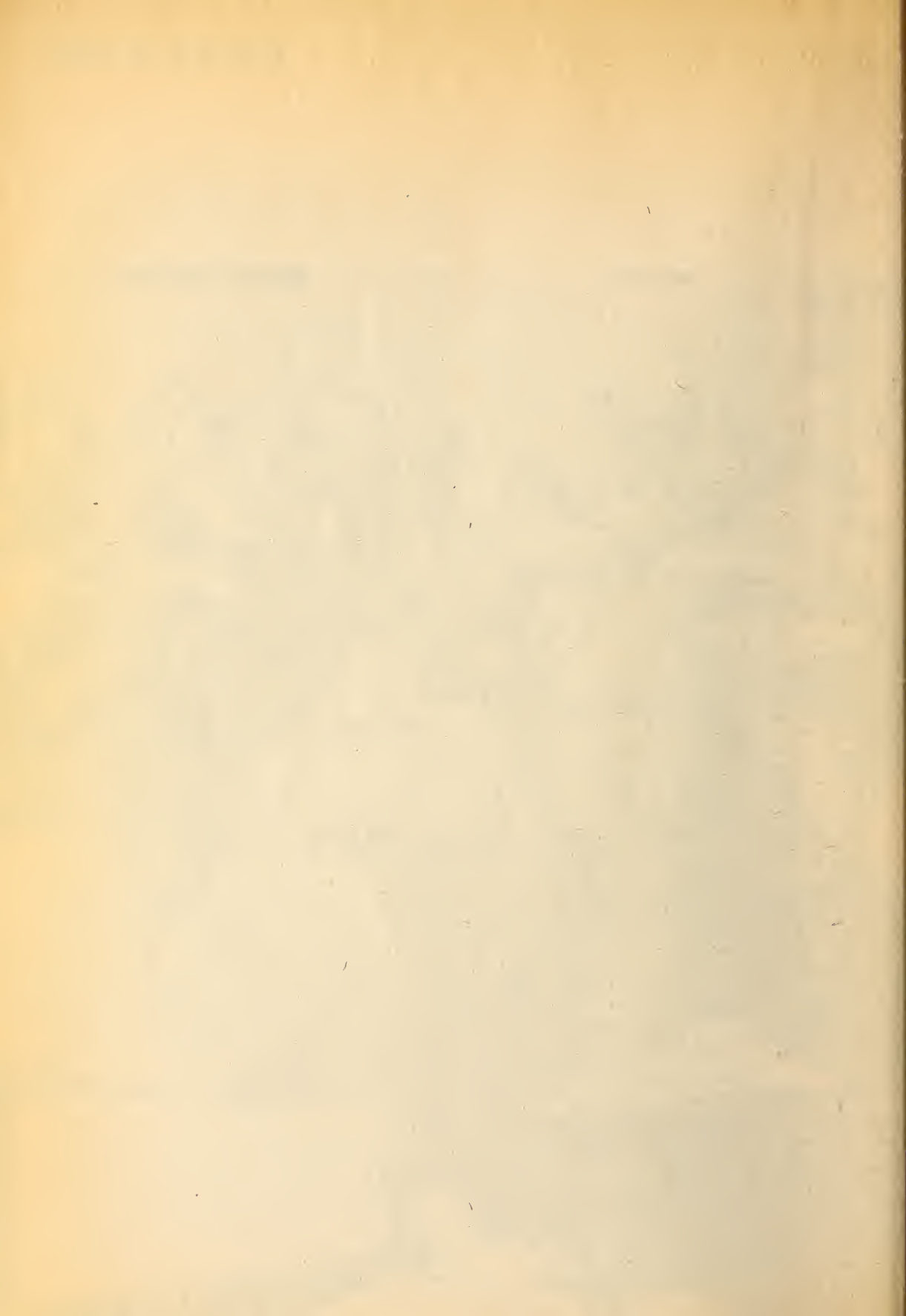
Students who wish to attend Carleton to receive credits toward a degree program taken elsewhere are eligible to register at Carleton as Special students. Such students who wish to exceed the normal course load or attend full-time should write or consult directly with the Registrar of Continuing Education.

Academic Information Service

The School of Continuing Education is equipped to offer information and advice to Special students who are currently registered and to prospective Special students. Appointments may be arranged by telephoning 231-6660. Evening appointments are available.

Faculty of Arts





Officers of the Faculty

Dean

N.E.S. Griffiths

Associate Dean

J. Yalden

Assistant Dean and Registrar

J.I. Jackson

Directory of Offices, Departments and Schools

Office of the Dean,
2009 Arts Tower, 231-3760

Office of the Associate Dean,
2011 Arts Tower, 231-2767

Registrar's Office,
312 Paterson Hall, 231-6690

Art History, D. Goodreau, Chairman,
2201 Arts Tower, 231-7156

Canadian Studies, S.F. Wise, Director,
1109 Arts Tower, 231-4474

Classics, D.G. Beer, Chairman,
2015 Arts Tower, 231-3740

Comparative Literature*, S. Sarkany, Chairman,
1517 Arts Tower, 231-4494

English, M.I. Cameron, Chairman,
1812 Arts Tower, 231-3847

Film Studies, C. Faulkner, Chairman,
427 St. Patrick's College Building, 231-6755

French, D. Smith, Chairman
1602 Arts Tower, 231-3754

German, J. Goheen, Chairman,
1315 Arts Tower, 231-2605

History, J.W. Strong, Chairman,
400 Paterson Hall, 231-2777

Italian, M. Ciavolella, Chairman,
1427 Arts Tower, 231-4481

Journalism, G.S. Adam, Director,
346 St. Patrick's College Building, 231-5530

Linguistics, I. Pringle, Chairman,
247 Paterson Hall, 231-5573

Mass Communication, John R. Weston, Supervisor,
346 St. Patrick's College Building, 231-5530

Music, A. Gillmor, Chairman,
A911 Loeb Building, 231-3633

Philosophy, B. Wand, Chairman,
2125 Arts Tower, 231-3868

Religion, P. Slater, Chairman,
2116 Arts Tower, 231-3863

Russian, B.W. Jones, Chairman,
1301 Arts Tower, 231-4488

Spanish, R. Larson, Chairman,
1419 Arts Tower, 231-4465

*Graduate level degree programs only. For details please see Graduate Studies and Research Calendar. For undergraduate courses in Comparative Literature see p. 129.

Other Programs

Directed Interdisciplinary Studies, S. Robinson,
Co-ordinator,
1719 Arts Tower, 231-7594



Faculty of Social Sciences





Officers of the Faculty

Dean

T. Ryan

Associate Dean

D. Fraser

Assistant Dean and Registrar

J.I. Jackson

Directory of Offices, Departments and Schools

Office of the Dean,

B450 Loeb Building, 231-3703

Office of the Associate Dean,

C473 Loeb Building 231-5614

Registrar's Office,

312 Paterson Hall, 231-6690

Accounting, See Commerce

Anthropology, See Sociology-Anthropology

Biology, H.G. Merriam, Chairman,

583 Tory Building, 231-3871

Canadian Studies, P. Smart, Chairman,

1717 Arts Tower, 231-3855

Commerce, J.B. Waugh, Director,

901 Arts Tower, 231-4373

Economics, T.K. Rymes, Chairman,

C871 Loeb Building, 231-4377

Geography, D.B. Knight, Chairman,

B340 Loeb Building, 231-2641

International Affairs*, J.H. Sigler, Director,

2A57 Paterson Hall, 231-2693

Law, R.L. Campbell, Chairman,

D586 Loeb Building, 231-7540

Mathematics, K. Williams, Chairman,

712 Arts Tower, 231-5500

Political Science, R.E. Bedeski, Chairman,

B640 Loeb Building, 231-2697

Psychology, W.G. Webster, Chairman,

B551 Loeb Building, 231-3636

Public Administration, G.B. Doern, Director,

1001 Arts Tower, 231-6360

Social Work*, G. Drover, Director,

469 St. Patrick's College Building, 231-3677

Sociology and Anthropology, D. Forcese, Chairman,

B750 Loeb Building, 231-6650

Soviet and East European Studies, C.H. MacMillan, Director,

257 Paterson Hall, 231-2711

*Graduate level degree program only. For details please see Graduate Studies and Research Calendar.

Other Programs

African Studies, F. Taylor, Co-ordinator,

B459 Loeb Building, 231-4396

Asian Studies, L. Librande, Chairman,

2213 Arts Tower, 231-3863

Criminology and Corrections, K. Hatt, Co-ordinator,

B750 Loeb Building, 231-6650

Directed Interdisciplinary Studies, S. Robinson, Co-ordinator,

1719 Arts Tower, 231-7594

Urban Studies, D.B. Knight, Co-ordinator,

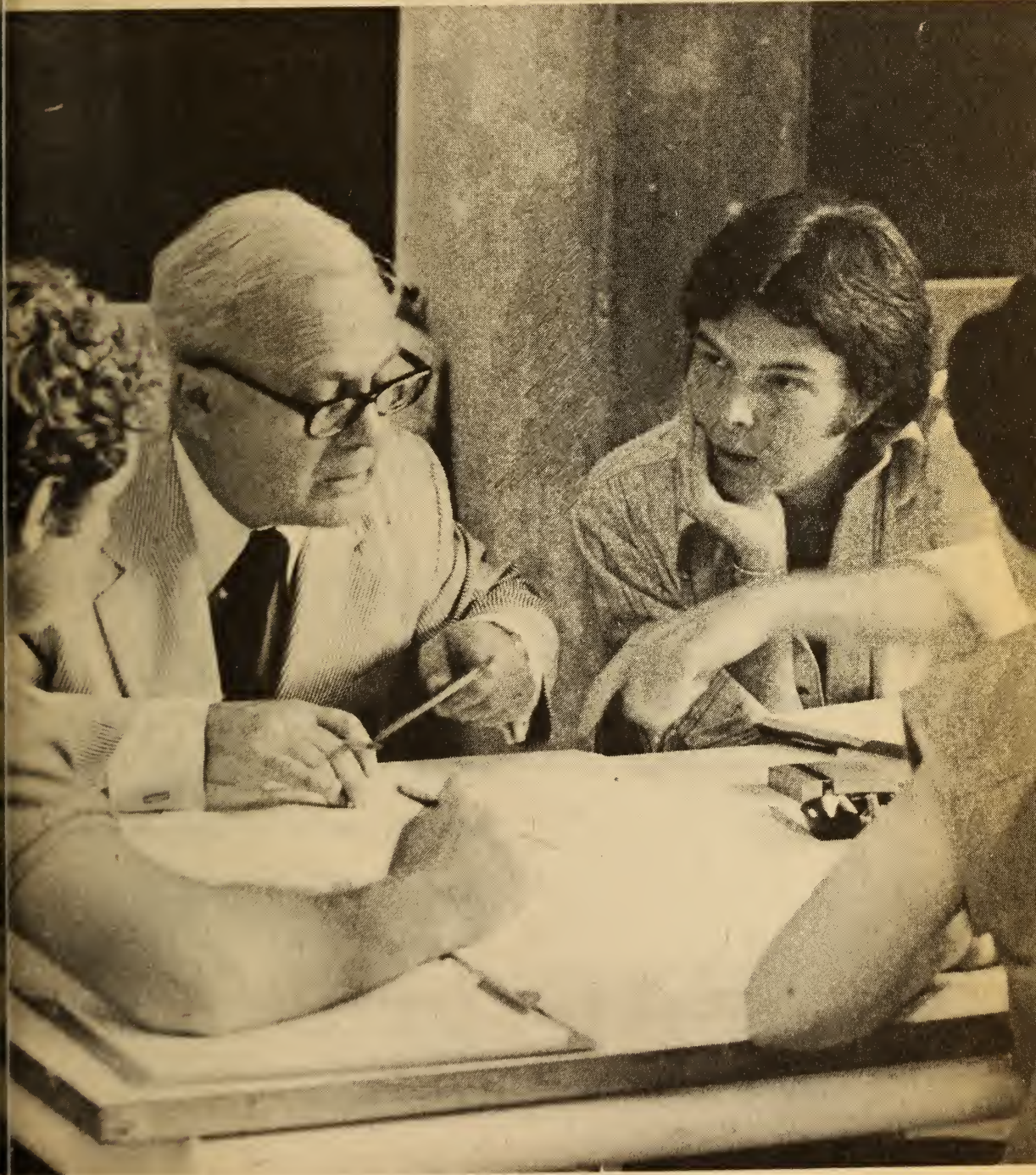
B350A Loeb Building, 231-1616

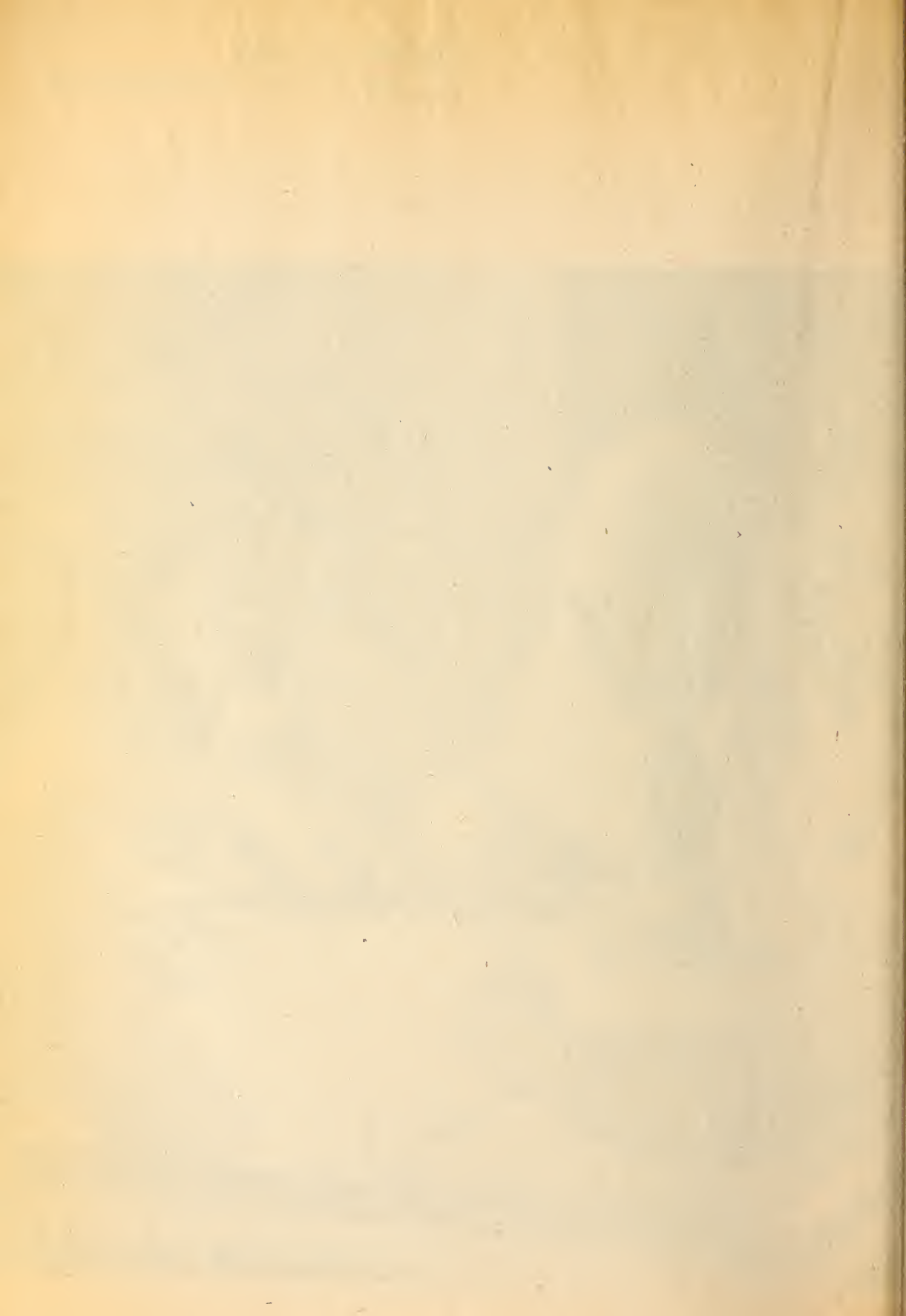
Women's Studies, D. Gorham, Co-ordinator,

464 Paterson Hall, 231-3894



Faculty of Arts
Faculty of Social Sciences





Faculty of Arts; Faculty of Social Sciences

Degree and Certificate Programs

Degree, Certificate and Diploma Programs

The Faculties of Arts and Social Sciences offer programs in five degrees, four certificates, and one diploma.

Bachelor of Arts and Bachelor of Arts with Honours (B.A.)

The three year Pass B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study. The program offers the degree with Major or Combined Major, or in Directed Interdisciplinary Studies.

The four-year program for the Honours B.A. provides more rigorous and extensive study in one or two disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching.

Bachelor of Commerce (B.Com.)

The four-year Honours program in Commerce provides a foundation in the disciplines essential to careers in business. The program is offered by the School of Commerce.

Bachelor of Journalism (B.J.)

The four-year Honours program and the one-year post-degree Honours program are both designed to prepare students for careers in the mass media. The program is offered by the School of Journalism.

Bachelor of Music (B.Mus.)

The four-year Honours program prepares students for graduate studies in musicology and ethno-musicology, and gives an essential background for careers in music librarianship, music administration, and teaching. The program is offered by the Department of Music.

Certificate in English Language and Composition (C.E.L.C.)

A five-credit post-degree certificate intended primarily for practising teachers, to upgrade their knowledge of areas of language and of writing theory which underlie the new Ontario guidelines. Also open to persons without a degree who hold a teaching certificate.

Certificate in Public Service Studies (C.P.S.S.)

This is a six-credit program in public service subjects at the undergraduate level. The program is offered by the School of Public Administration.

Certificate in the Teaching of English as a Second Language (C.T.E.S.L.)

This is a five-credit program in the theory and practice of teaching English as a second language. The program is offered by the Department of Linguistics.

Certificate in Law Enforcement Studies (C.L.E.S.)

A six-credit program designed primarily for persons employed in the area of law enforcement, national security or corrections. The program is coordinated by the Department of Sociology and Anthropology.

Diploma in Music (Dip.M.)

This is a one-year undergraduate program in Music combining musical performance with courses in general musical literacy, theory and history of music. It is offered by the Department of Music.

Disciplines of Specialization

The following table illustrates the choice of specialization available in the B.A. program. Commerce is available only in the B.Com. program. Honours in Journalism is available in the B.J. program, but Journalism may also be taken as a Combined Honours subject in the B.A. (Honours) program. Honours specialization in Music is available in the B.Mus. program, but Music is also available as a Major, Combined Major, or Combined Honours subject in the B.A. program.

For a B.A. with Major or Combined Major, students must present a total of fifteen credits if admitted to First year, or twenty if admitted to Qualifying University year. For a B.A. with Honours or Combined Honours, students must present a total of twenty credits if admitted to First year, or twenty-five if admitted to Qualifying University year. Program requirements are set out in detail in the Departmental entries in this Calendar.

	Major	Combined Major	Honours	Combined Honours
Anthropology	—	—	X	X
Art History	X	X	X	X
Biology	X	X	X	X
Canadian Studies	X	X	X	X
Classical Civilization	X	X	X	X
Classical Civilization (Ancient History)	—	X*	—	X*
Computer Science	—	X**	—	—
Economics	X	X	X	X
English	X	X	X	X
Film Studies	X	X	X	X
French	X	X	X	X
Geography	X	X	X	X
German	X	X	X	X
Greek	X	X	X	X
History	X	X	X	X
Italian	X	X	—	X
Journalism	—	—	—	X
Latin	X	X	X	X
Law ¹	X	X	X	X
Linguistics	X	X	X	X
Mass Communication	X	X	X	X
Mathematics	X	X	X	X
Mathematical Sciences	X	X***	X	X***
Music	X	X	—	X
Philosophy	X	X	X	X
Political Science	X	X	X	X
Psychology ¹	X	X	X	X
Public Administration	—	—	X	—
Religion	X	X	X	X
Russian	X	X	X	X
Sociology	—	—	X	X
Sociology-Anthropology ¹	X	X	—	—
Soviet and East European Studies	—	—	X	X
Spanish	X	X	X	X

*with History only

**with Mathematical Sciences only

***with Computer Science only

¹A concentration in Criminology and Corrections is offered in conjunction with specialization in Law, Psychology, and Sociology-Anthropology. (See p. 130.)

Academic Clubs and Societies

The following clubs and societies serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the faculties of Arts or Social Sciences.

The Biological Society sponsors academic and social events, promotes informal contact between students and faculty, and helps acquaint students with on-going biological research. Faculty adviser: Dr. M.B. Fenton.

The Carleton Cinema Club, open to all members of the University, promotes film events through public screenings, its own magazine, and a film production unit. Faculty sponsor: Professor Chris Faulkner.

The Classics Academic Society sponsors public lectures by visiting speakers and student-faculty social gatherings. Faculty co-ordinator: Chairman of the Classics Department.

The Carleton Commerce Society organizes social and academic events to strengthen the link between students, faculty, and the business community; and to promote stronger ties among Commerce students. Academic co-ordinator: Elaine Grout.

ELSS, the *English Literature Students' Society*, open to all students, offers theatre trips, work with a printing press, a lecture series, writers' groups, debating groups, reading groups, parties and the publication of a creative writing monthly. Faculty liaison: Parker Duchemin, M.B. Thompson, D. Wurtele.

The Club Francophone is open to all members of the University interested in the French language and in French and French-Canadian culture. The Club promotes informal language practice and sponsors speakers, discussions, musical and social events, films and excursions. Faculty adviser: Sinclair Robinson.

The Carleton University Geography Society (CUGS) organizes lunch-time talks or movies of academic interest and a variety of social events, promotes student-faculty contact, and sponsors the Harvey Humbolt Chair of Geomorphography.

The German Academic Society (formerly Deutschklub) is open to all members of the University interested in the language and culture of German-speaking countries. Weekly meetings with films and speakers are featured. Faculty contact: Chairman of the German Department.

The Ottawa Historical Association is a "town and gown" association of people interested in history, offering a series of lectures and discussions.

The Carleton Italian Cultural Society, in collaboration with the Department of Italian, sponsors a series of lectures on Italian topics, social events, and informal discussions for those interested in the language.

The Carleton University Journalism Students' Union offers a program including talks, seminars and panel participation by distinguished journalists.

MATHSOC, the *Carleton University Mathematics Society* features "Naire-Level Seminars" designed by and for mathematics undergraduates. The society office promotes contact between students at different stages in their studies. Faculty co-ordinator: Dr. John Poland.

The Music Department is affiliated with three groups which are open to anyone who is interested, and which perform both on and off-campus through the year. *Music Under Glass* is an ensemble specializing in music by avant-garde composers and students in the Department. The *Madrigal Singers* specializes in sixteenth- and seventeenth-century madrigals. It is a group of 15-20 singers, and auditions may be required. The *Collegium Musicum* comprises three sub-groups: the Carleton Renaissance Consort, concentrating on sixteenth- and seventeenth-century instrumental and vocal music; the Carleton Medieval Consort, of instrumentalists performing music up to the fifteenth century; and the Carleton Viol Consort, playing string music of the sixteenth and seventeenth centuries.

The Diogenes Club is a bi-weekly forum, meeting throughout the session to discuss philosophical topics. Faculty co-ordinator: R.J. Gaizauskas. The *Carleton University Student Journal of Philosophy* is a student-operated publication that publishes articles written by students from across Canada. Editors: W. Sweet, J. Gilhooly, A. Harley.

The Political Science Forum, the academic society of the Department of Political Science, promotes communication among students and faculty through seminars, speakers, symposia and social events.

The Public Administration Undergraduate Society organizes social and academic events to strengthen ties between students and faculty and to help acquaint students with current issues in Public Administration.

The Liberal Religious Society, open to all members of the University, conducts a regular program of symposia and meetings, to which guest speakers are invited, which explore all facets in man's continuing spiritual quest. Faculty Adviser: Professor Stephen Talmage.

CASA, the *Society for Students of Spanish*, welcomes all members of the University interested in Latin American and Spanish cultures and language. The emphasis is on the practice of the spoken language in a relaxed atmosphere and on sponsoring films, lectures, and social events to expose others to these cultures.

The Academic Regulations

Office of the Assistant Dean and Registrar, Faculties of Arts and Social Sciences

Assistant Dean and Registrar
J.I. Jackson

Assistant Registrar
C.E. Dence

Records Officers/Counsellors
M. Foulger
D. Monk
J. Nordenstrom

The Office of the Assistant Dean and Registrar is a source of general information on the Faculties' academic programs. Specific information about course content, subject matter, and the structure of Major or Honours programs is obtainable from the academic Departments.

Index

The regulations are grouped for ease of reference under indexed headings as follows:

- 1. Administration of the Regulations**
 - 1.1 General Administration
 - 1.2 Student Responsibility
 - 1.3 Requests and Appeals
- 2. Admission, Readmission, and Degree Transfer**
 - 2.1 New Students
 - 2.2 Readmission
 - 2.3 Change of Degree Program
- 3. Registration**
 - 3.1 Registration
 - 3.2 Late Registration
 - 3.3 Credit Value
 - 3.4 Course Load
 - 3.5 Auditing
 - 3.6 Change of Course and Section
 - 3.7 Withdrawal
 - 3.8 University of Ottawa Exchange Agreement
 - 3.9 Courses from other Faculties
 - 3.10 Transfer of Credit
 - 3.11 Residence
 - 3.12 Student Records
 - 3.13 Challenge for Credit
- 4. Promotion and Continuation**
 - 4.1 Standing in Courses
 - 4.2 Computation of Averages
 - 4.3 Promotion from Qualifying University year and First year
 - 4.4 Course Credit System
 - 4.5 Conditional Pass

- 4.6 Failure and Probation
- 4.7 Suspension
- 4.8 Accelerated Progress
- 5. Examinations**
 - 5.1 Supplemental Examinations
 - 5.2 Deferred Examinations and Final Papers
 - 5.3 Grade-Raising Examinations
 - 5.4 Eligibility
- 6. Entry and Continuation: Major and Honours Programs**
 - 6.1 Major Programs: B.A.
 - 6.2 (Directed Interdisciplinary Studies) B.A.
 - 6.3 Admission to Honours
 - 6.4 Continuation in Honours
 - 6.5 Honours Thesis or Research Essay
- 7. Graduation**
 - 7.1 Application to Graduate
 - 7.2 Graduation Requirements: B.A. (Major and Directed Interdisciplinary Studies)
 - 7.3 Distinction
 - 7.4 Graduation Requirements: B.A. (Honours), B.J., B.Com., B.Mus.
 - 7.5 Classes of Honours
- 8. The Qualifying University Year and First Year Curriculum**
 - 8.1 Qualifying University Year
 - 8.2 First Year
 - 8.3 Course Selection

1. Administration of the Regulations

1.1 General Administration

The regulations on the following pages are administered by the Faculty Registrar's Office and the student's Major Department. The Faculty Registrar's Office provides an academic counselling service, and students are urged to seek the service's advice on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, review of grades, and change of major or degree program. Appointments: 322 Paterson Hall (231-7407).

1.2 Student Responsibility

The student is responsible for knowing the regulations and complying with them. Specific written permission must be obtained for exceptions to the regulations. Routine approval of a records form (for example the registration contract or course-change form) does not constitute approval of an exception.

1.3 Requests and Appeals

The Faculties' Committee on Admission and Appeals is responsible for considering student requests for special consideration respecting the regulations. Decisions on requests are made by the Assistant Dean and Registrar according to guidelines set by the Committee. Students may have such decisions reviewed by making an appeal to the Committee.

Requests and appeals are made in writing to the Faculty Registrar's Office, if possible on the forms provided. Students should discuss their requests or appeals with a counsellor. The circumstances of any request or appeal are held in the strictest confidence.

2. Admission, Readmission, and Degree Transfer

2.1 New Students

Detailed requirements for initial admission to the Faculties' degree and certificate programs are given on pp. 29-34.

2.2 Readmission

Students in the following categories are required to apply for readmission before registration. Readmitted students are governed by the regulations in effect at the time of readmission.

- (a) Students who after graduation wish to pursue a further degree;
- (b) Students who have been absent from the University for two consecutive Winter sessions and the intervening Summer session;
- (c) Students who have been admitted to and taken courses at any other post-secondary institution since their last registration at Carleton (except students studying on a Letter of Permission from the Faculty Registrar's Office);
- (d) Students who have forfeited degree status.

Note:

Applications for readmission (obtainable from the Admissions Office) must be filed before July 1 for the Winter session and before April 1 for the Summer session.

2.3 Change of Degree Program

Applications to change degree programs must be made to the Faculty Registrar's Office by August 1 for the Winter session, by December 1 for Second and Spring terms of the Winter session, and by April 1 for the Summer session.

3. Registration

3.1 Registration

Students are to complete their course registrations in the registration periods shown for the session or term in the schedule for the Academic Year on pp. 10-12.

3.2 Late Registration

Registration after the registration period incurs a late registration fee. Registration is not permitted after the late registration period.

3.3 Credit Value

Unless otherwise indicated, courses in the Faculties are of one full credit, indicated 1.0 on all records documents. Courses marked * are half-credit courses, indicated 0.5.

3.4 Course Load

(a) Normal Load:

In the Winter session full-time students may register in the equivalent of five half-credits per term, part-time students in two half-credits per term, audited courses included.

In the Summer session students may enrol in up to two credits. This total includes audited courses and supplemental and grade-raising examinations.

(b) Overload

Permission to exceed these limits may be granted by the Faculty Registrar to students with a C average overall and in the Major (failures included) who completed a full course load in the previous session (five credits if full-time, two if part-time). The maximum permissible load in any term of the Winter session is six half-credit equivalents for full-time students and three half-credit equivalents for part-time students. Qualifying University year students may not exceed the normal load.

3.5 Auditing

Students may, with the instructor's permission, register in courses as auditors. (See p. 40 for details.) Auditors receive no grade and no credit for the course. The deadline for changing from audit to credit will be the final date for registration; for changing from credit to audit the deadline is the last withdrawal date.

3.6 Change of Course and Section

Changes of course, or of section within a course, must be reported to the Faculty Registrar's Office by the following dates:

Winter session full courses: September 19

First term half courses: September 19

Second term full or half courses: January 16

3.7 Withdrawal

Students withdrawing from courses or from their entire program must notify the Faculty Registrar's Office by the following dates. Students receiving scholarships or financial assistance should consult the Awards Office before dropping courses.

Winter session full courses: February 20

First term half courses: November 14

Second term full and half courses: March 20

For Summer session 1980 see the Summer Session Calendar.

For Summer session 1981 see the Academic Year pp. 10-12.

Note:

The onus for notifying the Registrar's Office of withdrawal rests solely with the student. Ceasing to attend lectures or informing the instructor does not constitute withdrawal, and normally results in an Abs or FNS grade.

3.8 University of Ottawa Exchange Agreement

Students maintaining full-time registration may, during their Second or higher year, take their fifth credit at the University of Ottawa without additional fee. Registration, on forms provided at the Faculty Registrar's Office, should be commenced early, because of the early registration period at the University of Ottawa.

Students withdrawing from an Exchange Agreement course must notify both Universities, or a grade of Abs or FNS may be recorded.

Grades are transferred to the student's Carleton record for courses taken at the University of Ottawa under this agreement.

3.9 Courses from Other Faculties and Schools

Students should consult the Faculty Registrar's Office about registering in courses from other Faculties and Schools. Science and Interdisciplinary courses are generally acceptable. Courses in Architecture, Engineering and Industrial Design are generally not acceptable and registration in these courses is normally not permitted. Professional courses in Journalism are not acceptable options with some majors in the B.A. program.

3.10 Transfer of Credit

Students in good standing who have completed at least five credits at Carleton may, with prior permission, take courses at another university and have the credit transferred to their program at Carleton. The following regulations on transfer of credit do not apply to students studying under exchange agreements, i.e., at Chambéry, Trois Rivières, and the University of Ottawa.

Maximum Load

Subject to the regulations of the host university, a Carleton student on a Letter of Permission may take a maximum of 2.0 credits in the Summer and 5.0 credits in the Winter session.

Transfers of Grade

(a) Grades for courses taken on Letters of Permission will not be transferred.

(b) The Major department or the Registrar may require that the student obtain a minimum grade higher than the passing grade. The student shall be notified of such a requirement when the Letter of Permission is issued. Should the student pass the course but fail to meet this minimum grade, credit will not be recorded.

(c) Failure on a course taken elsewhere will be recorded with the appropriate credit value.

(d) If a student writes a supplemental examination in a course taken on a Letter of Permission, both the failure and subsequent pass will be recorded.

Reporting

(a) Students are required to present to Carleton an official transcript showing results in courses taken on a Letter of Permission. If the transcript is not forthcoming, the course will be awarded a failing grade.

(b) Students completing a final credit for a degree on a Letter of Permission during the Winter session are warned that transfer grades may not be available in time for Spring graduation.

Applications for a Letter of Permission must be obtained from the Faculty Registrar's Office. The application form must be returned to that office accompanied by a photocopy of the official description of the course.

Applications for a Letter of Permission must be made by November 15, 1980, for January registration; March 30, 1981, for Summer registration; and July 27, 1981 for September registration.

Note:

Students who take courses without obtaining a Letter of Permission will be not granted credit for the courses. Permission obtained from an instructor or from a department does not obligate the University to accept a credit.

3.11 Residence Requirement

To obtain a degree from Carleton University, students must present a minimum of five credits taken at Carleton. These five credits must include credits in the Major or Honours subject(s) as follows:

Major: 3.0 credits;

Combined Major: 3.0 credits in one subject and 2.0 credits in the other;

Honours: 4.0 credits including the Honours thesis or comprehensive examination where it is a requirement of the program;

Combined Honours: 3.0 credits in one subject and 2.0 credits in the other including the Honours thesis or comprehensive examination where it is a requirement of the program.

Departments may require that certain of these credits be at the senior level.

3.12 Student Records

Incorrect address information will delay the receipt of awards, examination results, and notification of changes in academic status. Students must notify the Faculty Registrar's Office immediately of any change in:

- (a) permanent or home address (used for final grades and permits to register);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address;
- (d) name.

In the latter part of the First term of the Winter session students will be mailed a "Confirmation of Registration", listing the courses and sections in which they are registered and showing the biographical information which appears in their file. Errors in this information must be reported to the Faculty Registrar's Office at once.

3.13 Challenge for Credit

A student with experience and non-university learning equivalent to a specific Carleton course may receive credit for that course through the Challenge for Credit procedure. If a department is satisfied that a student is adequately grounded in a course, credit may be granted by examination, without the normal requirements of attendance and instruction. Not all departments participate in this procedure. Interested students should enquire at the Faculty Registrar's Office.

4. Promotion and Continuation

4.1 Standing in Courses

Standing in courses is shown by alphabetical grades as described on p. 43. Supplemental examinations are graded by the same scale.

In addition the following symbols apply in the Faculties of Arts and Social Sciences:

Abs

Absent from formally scheduled final examinations where the necessary term work has been completed. (This grade bears academic penalty in that for purposes of promotion and calculation of certain averages it is interpreted as an *FNS* grade.)

Aeg

A passing grade granted on the basis of course work when no further assessment is considered feasible (see also 5.2). Aegrotat is granted only with the approval of the Committee on Admission and Appeals.

Def

Final grades deferred for personal or medical reasons with approval of the Committee on Admission and Appeals.

IP

Honours thesis or essay is "In Progress". (See p. 91-92.)

4.2 Computation of Averages

The twelve-grade-point system is set out on p. 43. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a half-credit course will earn the student six grade points, while A+ in a two-credit course would be worth twenty-four grade points.

Grade-point averages are calculated by dividing the total accumulated grade points by the total credits. Both the credits and the grade points are doubled in the case of double-weighted courses.

Averages for graduation are calculated on the grades earned in the number of courses required for the degree, taking first into consideration the grades earned in the courses of the Major or Honours department. Some departments include all courses in the Major/Honours field; others include only those required by the program. Failures are not included in the calculation of graduation averages.

4.3 Promotion from Qualifying University Year and First Year

A full-time student must pass four credits and obtain C- or better in two credits. A part-time student must pass four of the first six credits attempted and obtain C- in two credits.

4.4 Course Credit System

Students meeting promotion requirements at the end of First year will proceed on the Course Credit system. Under this system there is no further promotion from one year to the next.

After promotion to the Course Credit system a student in a three-year degree program may accumulate failing grades (*F*, *FNS*, *ABS*), grade-raising examinations and repeated courses equivalent to no more than five credits. A student in an Honours program may accumulate only three. (A failed course followed by a failed supplemental count as two discredits.)

Students who have not graduated seven years after promotion to the Course Credit system may have their remaining requirements reviewed.

4.5 Conditional Pass

Full-time students who are not on the Course Credit system or on probation, and who pass 3.0 or 3.5 credits in the Spring examinations will be considered to have passed their year conditionally. They must meet the requirements of 4.3 by the end of the August examination period, by taking Carleton Summer courses or writing supplementals to a maximum of two credits.

A student who has passed conditionally may write supplemental examinations and take replacement courses in not more than a total of two credits in the Summer session.

4.6 Failure and Probation

A student who fails to meet the promotion requirements in 4.3 and 4.5 and who is not on the Course Credit system has failed. Credits passed will count towards the degree, but may not be used to meet subsequent promotion requirements.

A student who has failed may return on probation. To clear probation a full-time student must pass four credits and obtain C- or better in two credits in the Spring final examinations. A part-time student must pass four credits of the next five attempted and obtain C- in two of these credits. Students on probation may not write supplemental or grade-raising examinations or receive letters of permission.

4.7 Suspension

A student on probation who fails to meet the terms of probation is suspended and becomes ineligible for further registration in a degree program in the Faculties of Arts or Social Sciences.

Students under suspension may be readmitted to a degree program only by meeting terms prescribed by the Committee on Admission and Appeals. These terms will be prescribed individually in response to the student's appeal which should be made immediately after suspension.

Courses taken while a student is under suspension will not establish eligibility for re-admission or for a degree.

4.8 Accelerated Progress

Students admitted to Qualifying University year may have some or all of the courses taken in Qualifying University year count toward the degree if they:

- (a) have completed at Carleton two consecutive years' full-time study and are in a Major or Honours program;
- (b) have no failures or grade-raising examinations on their record; and
- (c) present a minimum B- 7.0 average on 10 or more credits, or a total of 70 grade points on 9.0 or 9.5 credits. If more than 10 credits are presented all will be used to calculate the average.

Application forms are available in the Faculty Registrar's Office and should be submitted upon completion of the second year of study after advice from a counsellor.

5. Examinations

General regulations on examinations are on pp. 44-45. In addition the following regulations apply to students in the Faculties of Arts and Social Sciences.

5.1 Supplemental Examinations

Students may request a supplemental examination in a course graded F. Supplementals are not available in all courses. Courses graded FNS or Abs are not eligible for supplementals.

5.2 Deferred Examinations and Final Papers

Students unable to write a final examination or complete the final term paper because of illness or other circumstances beyond their control may apply *within fourteen days* to the Faculty Registrar's Office for permission to write a deferred examination or extend a term paper deadline. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

Students unable to complete a course may apply for aegrotat standing (Aeg), but this will be granted only in exceptional circumstances and if term work has been of high quality. As Aeg indicates only a passing standard, students aiming for a high grade-point average may prefer to write a deferred examination.

Deferred examinations are not granted to students who make travel plans that conflict with the examination period.

5.3 Grade-Raising Examinations

A student may apply to write an examination in a course already passed. No more than three grade-raising examinations may be written in any degree program (including Qualifying University year). Please refer to "Grade-Raising Examinations", p. 44.

The grade received on this examination will supersede the previous grade whether it is higher or lower. For this reason students are strongly advised to consult with a counsellor before applying for a grade-raising examination.

5.4 Eligibility

- (a) No student may write supplemental and/or grade-raising examinations in more than two credits in any academic year.
- (b) Students on probation may not write supplementals or grade-raising examinations.

(c) Students who pass conditionally in the Spring but fail to meet the terms of promotion by the end of the Summer may not write supplementals or grade-raising examinations on Summer courses.

6. Entry and Continuation: Major and Honours Programs

6.1 Major Programs: B.A.

Students should apply to enter or change their Major affiliation as soon as possible after completing the relevant introductory course. Students are required to enter a Major after promotion from First year, unless granted exemption by the Assistant Dean. Application may be made during registration, or through the Faculty Registrar's Office.

Commencing in September, 1980, students must be in a Major to register in Third year; those ineligible to enter a Major will be ineligible to register in the B.A. program.

To be accepted into a Major, students must have at least a C- average in the courses of their Major or Majors.

Students whose Major average is less than C- at the end of Second year may be required to withdraw from their Major.

6.2 B.A. (Directed Interdisciplinary Studies)

Students apply for admission to the program on promotion from First year, or, if transferring from a Major program, before beginning their final five credits. The application must stipulate a minimum of eight credits related to a theme or topic of concentration. Two credits of the eight must be among the students' final five credits.

Application forms, available at the Faculty Registrar's Office, should be received before the academic year of intended entry, preferably by August 15.

6.3 Admission to Honours: B.A. (Hons.), B.Com., B.J., B.Mus.

Students may apply for Honours at any time after having completed the introductory course in the discipline. They should consult the Honours adviser of the Department before making application.

Application for Honours may be made at registration or, during the remainder of the year, through the Faculty Registrar's Office. Applications which involve a change of degree (B.A. to B.J. for example) must be made on a Degree Transfer form and are subject to deadlines as set out on p. 87.

For entry into Honours, a student must have a grade-point average of 6.0 or better in the Honours subject and 4.0 or better overall and the recommendation of the Honours Department or Departments.

6.4 Continuation in Honours

For continuation in Honours a student must maintain a grade-point average of 6.0 or better in the Honours subject or subjects and 4.0 or better overall.

At the beginning of their last five credits, students in Honours must have a grade of C- or better in at least half of the courses to be credited towards the degree.

Students who fail to maintain Honours standing must withdraw from the Honours program. They may apply for admission to a Major program. Students in this situation are advised to contact a counsellor in the Faculty Registrar's Office.

6.5 The Honours Thesis or Research Essay

General

Although the scope of the Honours Research Essay or Thesis should not exceed what the student can reasonably expect to complete within an academic session, up to two re-registrations are permitted. If the thesis is not completed within three consecutive sessions, a grade of F will be assigned. (Students who first register in September must submit the finished thesis by April 1 of the following Fall/Winter session.)

Registration and Re-registration

The following table sets out a typical registration, re-registration schedule for a student registering in a thesis for the first time in September 1980. Please note that fees may change, and that there is a late fee payment assessed during the late registration period.

Registration	Deadline*	Fee	Deadline for Submission of Completed Thesis	Grade if not Complete	Deadline for Withdrawal from Thesis*
Initial Registration	Last day for late registration (Sept.)	\$181.50 per credit	June 1 (April 1 for Spring graduation)	IP	Last day for withdrawal from full courses (Feb.)
First Re-registration**	Last day for late registration for Summer session Day division (July)	\$ 90.75	Sept. 15	IP	Last day for withdrawal from Summer session Day division full courses
Second Re-registration	Last day for late registration (Sept.)	\$ 90.75	April 1	F	Last day for withdrawal from full courses (Feb.)

* Consult "The Academic Year" applicable to each year, for precise dates (see pp. 10-12).

**Optional — see below

The First re-registration is optional. Students should note, however, that they are not eligible for supervision or library privileges, may not submit a thesis for grading, and may not graduate, if they are not registered.

The Second re-registration is compulsory for students whose theses are still outstanding at the beginning of the third session. To avoid such re-registration students must either:

(a) withdraw from the Honours program, notifying the Registrar's Office of their intention, in writing, no later than the last date for late registration.

(b) notify the Registrar's Office of intention to complete the Honours program by means of appropriate alternative courses approved by the Honours supervisor.

Withdrawal

Students may withdraw from the Honours thesis up to the last date for withdrawal from full courses in the Session. Students who withdraw during their first session of registration will retain Honours status. Students who withdraw from a re-registration will forfeit Honours status, unless they simultaneously transfer to another course or courses which meet Honours requirements. Students who withdraw from the Honours program will automatically be withdrawn from the Honours Thesis.

Re-Instatement

Students who forfeit Honours status, either by withdrawing from the thesis or by obtaining an F grade for

non-completion, may apply for reinstatement in the Honours program. The department may require such students to begin a new project. Following reinstatement, students will normally commence a new registration cycle of three consecutive sessions. They will pay a full registration fee.

In the academic year immediately following the one in which Honours status was forfeited, students will apply through the Faculty Registrar's Office. Subsequently, they will apply through the Admissions Office.

7. Graduation

7.1 Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the Faculty Registrar's Office by February 1, those expecting to graduate in the Fall, by September 1, and those expecting to graduate in February, by December 1.

7.2 Graduation Requirements: B.A. (Major and Interdisciplinary)

Candidates must meet the following requirements:

- (a) fifteen credits beyond Qualifying University year;
- (b) a minimum of eight credits at the 200 level or higher;
- (c) requirements of Major program; or as set by the Directed Interdisciplinary Studies Committee;

(d) a minimum grade of C- in half the courses presented (not including Qualifying University year);

(e) a minimum average of C- in the Major field or, in the case of Combined Majors, in each Major field; or, in the case of the Directed Interdisciplinary Studies B.A., an overall average of C- in all courses presented for the degree.

(f) Failing grades (*F*, *FNS*, *ABS*), grade-raising examinations and repeated courses equivalent to no more than five credits after promotion to the course credit system. (A failed course followed by a failed supplemental count as two discreduits.)

Note:

In calculating the average in the Major some departments count all courses taken in the Major field while others count only the courses required. Students who have any questions about the calculation of their graduation average are advised to consult with a counsellor.

7.3 Distinction

Subject to changes in regulations, students in a three-year program will be designated as graduating "with distinction" if:

(a) they have successfully completed the fifteen credits required for the degree without a failure, supplemental, repetition or replacement; and

(b) the ten credits taken beyond the First-year requirement were taken at Carleton and the grade-point total was at least ninety.

7.4 Graduation Requirements: B.A. (Honours), B.J., B.Com., B.Mus.

Candidates must meet the following requirements:

(a) twenty credits beyond Qualifying University year as set out in departmental regulations (twenty-one credits for Journalism);

(b) a minimum of eleven credits at the 200 level or higher (thirteen for Commerce);

(c) requirements of the Honours program;

(d) a minimum of C- in half the courses presented for the degree;

(e) For students entering Honours for the session beginning in September, 1980, a minimum grade-point average of 6.5 in each Honours field and 4.0 overall. For students in Honours prior to that session, 6.0 and 4.0, except in the B.Com.

(f) Failing grades (*F*, *FNS*, *ABS*), grade-raising examinations, and repeated courses equivalent to no more than three credits after promotion to the course credit system. (A failed course followed by a failed supplemental count as two discreduits.)

Note:

In calculating the average in the Honours discipline some Departments include all courses in that disci-

pline while others include only the courses required in the program. Students who have any questions about the calculation of their graduation average are advised to consult with a counsellor. Courses taken in Qualifying University year are not included in graduation requirements except where they include a course required by the program.

7.5 Classes of Honours

For students entering Honours for the session beginning September, 1980, three classes of honours degrees are awarded according to grade-point averages attained:

(a) Highest Honours: 10.0 in the Honours subject and 8.0 overall.

(b) High Honours: 9.0 in the Honours subject and 7.0 overall.

(c) Honours: 6.5 in the Honours subject and 5.0 overall.

Departments may recommend the next higher class of Honours degree when a student has one average in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of Honours degree for students in Combined Honours programs the average is taken in each of the two subjects, and the simple average of the two is used.

Students who entered Honours for sessions prior to September, 1980, are awarded four classes of Honours as follows:

First Class

(a) For students admitted to Honours prior to March 1, 1977: 9.0 or better in the Honours subject and 6.0 or better overall.

(b) For students admitted to Honours after February 28, 1977: 9.0 or better in the Honours subject and 7.0 or better overall.

High Second Class

(a) For students admitted to Honours prior to March 1, 1977: 8.0 or better in the Honours subject and 5.0 or better overall.

(b) For students admitted to Honours after February 28, 1977: 8.0 or better in the Honours subject and 6.0 or better overall.

Second Class

6.0 or better in the Honours subject and 4.0 or better overall.

Third Class

(a) For students admitted to Honours prior to September 6, 1977: 4.0 or better in the Honours subject and 3.6 or better overall.

(b) Students admitted to Honours after September 5, 1977 are not eligible for Third Class Honours, except in the B.Com. program.

8. The Qualifying University Year and First Year Curriculum

8.1 Qualifying University Year

Students in Qualifying University year must present five credits, which must include two of:

- (a) A 100-level course in English;
- (b) Mathematics 69.006* and 69.007*;
- (c) A language other than English.

The remaining credits are to be selected from the list in 8.3 below. Students planning to apply for admission to the B.J. program must take a modern language course. Those planning to apply for the B.Mus. program should discuss the choice of a Music course with the Chairman of the Music Department. Qualifying University year students should be aware of the provisions for Accelerated Progress (see 4.8).

8.2 First Year

First-year students must present five credits from the list in 8.3. Students in the B.Com., B.J., and B.Mus. programs must meet the First-year prescriptions of their programs. First year B.A. students are encouraged to select courses which will acquaint them with the range of studies across the social sciences, arts, and languages. Students should include in their First-year registration any course which is required for their prospective Major or Honours concentration, and should be aware that many upper-year courses stipulate prerequisites.

8.3 Course Selection

Students in Qualifying-University and First year must attend the Summer Advisory Service, which provides full information on course selection. The Service operates through July and August and through Registration, by appointment with the Faculty Registrar's Office.

Subject to the provisions of 8.1 and 8.2 and placement requirements, Qualifying-University and First year students can choose 100-level courses from all departments in Arts, Social Sciences, and Science. In addition, the following departments will allow Qualifying-University and First year students to take certain courses numbered 200 and above: Art History, Classics (Greek, Latin), Computer Science, English, French, Geography, Geology, German, History, Italian, Music, Philosophy, Religion, Russian, and Spanish. Complete information is available in publications of the Summer Advisory Service.

While the University makes every effort to allow students to enrol in programs of their choice, enrolments may have to be limited in certain of the more popular courses.

Officers of the School

Director

J.B. Waugh

Assistant to the Director

(Mrs.) L. Fallis

■ Accounting

Co-ordinator

J.B. Waugh

Associate Professors

C.D. Acland

R. Beshara

R. Caterina

J.B. Waugh

Assistant Professor

D. Herauf

Lecturer

A.H. Cook

Instructor

P.R. Downing

Special Lecturers

W.K. Brownlee

A.R. Thomas

Sessional Lecturers

K. Au-Yeung

H. Boyce

P.D. Clark

T. Foran

B. Gilhooly

R. Hart

A. Mattice

J.A. Nason

I. Neville

J. Prokaska

J.J. Rooney

■ Management Studies

Associate Professors

J.A. Barnhill

J.C. Bourgeois

W.M. Lawson

W.L. Weber

Assistant Professors

A.J. Bailetti

S. Luce

N. Papadopoulos

D.A. Thomas

Instructor

K. Byrne

Session Lecturers

R. Adrian

D. Birdwise

J. Burns

R. Dodson

N. Fletcher

H.P. Johri

B.M. McGugan

N. Moyer

G. Neufeld

J. Orbach

A. Parras

T. Rochefort

P. Rudin

Committee of Management

C.D. Acland

A.J. Bailetti

J.A. Barnhill

R. Beshara

J.C. Bourgeois

K. Byrne

R. Caterina

A.H. Cook

P.R. Downing

D. Herauf

W.M. Lawson

N. Papadopoulos

S.B. Park (*Economics*)

M. Prince (*Public Administration*)

T.J. Ryan, (*Dean, Faculty of Social Sciences*)

N. Sargent (*Law*)

D.A. Thomas

J.B. Waugh

W.L. Weber

M. Willis (*Student Representative*)

Bachelor of Commerce with Honours

The Bachelor of Commerce degree is an Honours program and candidates are required to complete a four year course of studies after Senior Matriculation.

The Commerce program is designed to provide a broad foundation in the academic disciplines underlying business and economic affairs. The required courses introduce the student to the relevant academic disciplines and to the functional areas of management. All students, in consultation with the faculty of the School, may structure the balance of their program to build upon this foundation in accordance with their personal career objectives and areas of interest. Suggested options for selected areas of interest are listed below. (*See Fields of Interest.*)

The program is offered chiefly in the Day division; most course offerings are also available in the Evening division. Each student, however, must spend a minimum of one year as a full-time student in the Day division.

Students who intend to proceed to a professional accounting qualification as a Chartered Accountant (C.A.), Certified General Accountant (C.G.A.), or Registered Industrial Accountant (R.I.A.), should consult with one of the faculty members in Accounting.

Students who may wish to proceed to a Master's Degree in Public Administration at Carleton University are recommended to discuss their optional courses with the Director of the School of Public Administration.

Admission Requirements

First Year

1. Completion of Qualifying University year with a grade-point average of 4.0 or better including Mathematics 69.006* and 69.007*; or
2. The Ontario Secondary School Honour Graduation Diploma with a minimum 65% average and including Functions and Calculus.
3. Students who fail to meet the standards required for entry to the Honours program may elect to take their First year in the three-year Bachelor of Arts program. This First-year program should include Accounting 41.101*, 41.102*, Economics 43.100 and Mathematics 69.107* and 69.127*. Application may then be made for admission to the Second year of the Commerce program. The requirements for Admission to Honours will apply. (See page 91.)

Note:

Students who are required to register in the pre-calculus course, Mathematics 69.106* (see Placement in First-year Mathematics courses, p. 394) will be admitted to the Commerce program, but will not receive credit for Mathematics 69.106* as a degree credit course.

Second and Subsequent Years

Applications for admission to the Second or subsequent years will be assessed on their merits. Minimum transfer requirements are stated on p. 91. Advanced standing will be granted only for those subjects which are assessed as appropriate for the Commerce program.

Selective Admission

It should be noted that the number of student spaces in the School is limited. Because of this it is expected that it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the program.

Course Requirements

Candidates for the Bachelor of Commerce degree take a total of 25 courses after Junior Matriculation or 20 after Senior Matriculation. Students with a prior university degree will receive advanced standing where appropriate. Acceptance in the program will be governed by the standards required for entry to the Honours program, however, and a minimum of seven additional courses will be required, following admission to the program, for the Bachelor of Commerce degree. Students who propose to include language courses in their program must obtain prior approval from the School.

Academic Standing

In addition to the C- requirement in First-year Economics, students entering the Second year of the program must present a minimum grade of C- in one of the required First-year courses, Mathematics or Accounting.

Entry to Fourth-year courses offered in Accounting and Management Studies will be governed by academic performance in prerequisite courses. The minimum acceptable grade for entry into such courses is a grade of C- in the designated prerequisites.

The attention of students is drawn to the regulations relating to Honours on pp. 91-92 of the Calendar. In addition to the graduation regulations listed on page 92, candidates for graduation in Commerce must present a minimum overall grade-point average of 4.0 in their graduating year.

In calculating grade-point averages for the class of Honours, the average will be taken of all required courses.

Course Load

The normal course load for a full-time undergraduate during the Winter session is five full courses. In the Commerce program slightly more than half of these courses are obligatory. Subject to program approval the remaining courses may be selected in the light of individual preference.

Course Selection

Required Courses

Under the Course Credit system there is no promotion from one year to the next. The required course listings for Second year and subsequent years, then, reflect a

recommended sequence of courses pattern; individual students may wish to adapt the timing of individual course selection to meet their own particular needs or preferences.

First Year

Accounting 41.100
Economics 43.100
Mathematics 69.107*, and 69.117* or 69.127*
Psychology 49.100 or Sociology 53.100

Second Year

Computer Science 95.101* or 95.104*
Economics 43.200
Economics 43.220
Management Studies 42.208*
Management Studies 42.250*
Management Studies 42.290* or 42.291*
Management Studies 42.357*

Third Year

Economics 43.210
Management Studies 42.310* and 42.311*

Fourth Year

Three approved 400 level course credits, including Management Studies 42.490*

Courses Offered

Courses offered by the School of Commerce are listed, under the appropriate headings, in alphabetical order with all courses offered by the Faculty of Arts and Social Sciences:

Accounting: see p. 111.

Management Studies: see p. 213.

Suggested Options for Selected Fields of Interest

The following table sets out a listing of suggested options by area of interest. Primary-interest courses are designated by an X; courses of secondary or general interest by an O. The courses listed are intended to provide a general guideline only; consultation with members of the faculty is recommended.

Possible Special Interest Streams in Commerce

1. Accounting
2. Economics
3. Finance
4. Labour and Industrial Relations
5. Management and Business Systems
6. Marketing
7. Quantitative Methods

X — of primary interest

O — of interest

Course	Special Interest Stream						
	1	2	3	4	5	6	7
28.210 The Mass Media in Modern Society				O		O	
41.200 Intermediate Accounting	X		O		O		
41.301* Accounting for Business Combinations	X						
41.306* Financial Reporting Problems	X		O				
41.325* Cost Accounting	X		O		X		
41.326* Management Accounting Systems	X		O		X		
41.400* Accounting Theory	X						
41.401* Research Topics in Accounting	X						
41.412* Auditing	X				O		
42.290* An Introduction to Business Information Systems	X			O	X	O	O
42.291* Quantitative Applications of Computers in Business	O	O	X	O	X	X	X

Course	Special Interest Stream						
	1	2	3	4	5	6	7
42.307* Production	O	O			O		O
42.312* Personnel Management				X			
42.315* Marketing Communications						X	
42.391* Business Data Processing Systems	X				X		O
42.404* Operations Research I	O	X	X		O	O	X
42.405* Operations Research II	O	O	O		O	O	X
42.406* Corporate Finance	X	X	X				O
42.409 Statistical Decision Theory	O		O		O	O	X
42.410* Finance and Capital Markets	X	X	X				
42.411* Investments	O	O	X				O
42.416 Consumer Behaviour	O	O				X	
42.417* Marketing Research	O	O			O	X	O
42.418* Marketing Management		O				X	
42.480* Applied Organization Theory				X			
43.325 Economic Development of Canada	O	O					
43.335 Political Economy in the Modern State		O		O			
43.356* Introduction to Labour Economics		O		X			
43.360* Topics in International Economics		O				O	
43.361* Introduction to International Trade		O				O	
43.362* International Monetary Problems		O	O				
43.365* The Economics of Planning	O	O					
43.380* Topics in Canadian Economic Policy		X		O			
43.420* Micro-Economic Theory		X	O				
43.421* Macro-Economic Theory		X					
43.430 Industrial Organization and Public Policy	O	X		O			
43.435 Manpower Economics and Labour Policy		O		X			
43.465 Industrial Relations	O	O		X			
43.485 Introduction to Econometrics			O				X
47.403* Politics and the Media						O	
49.210* Introduction to Social Psychology	O			X		X	
49.212* Attitudes				X		X	
49.260* Introduction to Study of Personality				O		X	
49.262* Self Theories				O		O	
49.268 The Person and His Behaviour				O		O	
49.308 The Analysis of Individual Behaviour				O		O	
49.321* Perception						O	
49.340 Personnel Psychology				X			
51.220 Commercial Law I	X		O				
51.320 Commercial Law II	O		O				
51.321 Company Law	O		O				

Course	Special Interest Stream						
	1	2	3	4	5	6	7
51.322 International Economic Law I		X					
51.324 Tax Law and Policy	X	O	O				
51.325 Consumer Law	O					O	
51.441 Labour Law				X			
51.445* Labour Relations in the Public Service				X			
53.210* Social Psychology				X		X	
53.245 The Sociology of Work				X			
53.246* Industrial Sociology				X			
53.251* Introduction to Population Studies						O	
53.351* Methods of Population Analysis						O	
53.355 Complex Organizations				O			
53.400 Sociological Analysis						X	
53.450* Advanced Research Methodology						O	
69.201 Intermediate Calculus (or 69.207*/69.208*)		O	X		O		X
69.217* Linear Algebra			O		O		X
69.350 Statistical Theory						O	
69.351 Statistical Methods			X		O	X	X
69.384 Information Structures					O		
94.305* Industrial Engineering II							O
95.202* Advanced Programming Techniques					X		
95.304* File Structures and Data Bases					X		
95.401* Operating Systems					O		
95.480* Introduction to Software Engineering					X		

School of Journalism

Officers of the School

Director

G. Stuart Adam

Supervisor of Graduate Studies

Robert J. Rupert

Co-ordinator of One-Year Program

Sandra Came

Supervisor of Undergraduate Studies, Journalism

Roger Bird

Supervisor of Undergraduate Studies, Mass Communication

John R. Weston

Professor Emeritus

Wilfrid Eggleston

Professors

T. Joseph Scanlon

Anthony Westell

Associate Professors

G. Stuart Adam

Roger Bird

Carman Cumming

Murray Goldblatt

Patrick MacFadden

Thomas McPhail

Brian Nolan

Robert Rupert

Marvin Schiff

Brian Taylor

David Van Praagh

John R. Weston

Phyllis Wilson

Assistant Professors

Sandra Came

George Fraykor

Alan Frizzell

Peter Johansen

Visiting Associate Professor

Cameron Graham

Sessional Lecturers

Elly Alboim

Jack Best

Wayne Cheveldayoff

John Hay

Sarah Jennings

Don McGillivray

Carl Mollins

Ron Poling

Brian Sargeant

Film Technician

Helga Gossage

Field Work Supervisors

Rod Currie (*Canadian Press*)

Fran Cutler (*Canadian Broadcasting Corporation*)

Gordon Eastwood (*The Ottawa Journal*)

Max Keeping (*CJOH*)

Don Leger (*CFRA*)

Robert Lewis (*Maclean's Magazine*)

Arch MacKenzie (*Canadian Press*)

Steven Madely (*CFGO*)

Sidney Margles (*Standard Broadcasting*)

Al McKay (*CJOH*)

Bob Monteith (*The Toronto Sun*)

Phil O'Reilly (*Information Services Branch, Canadian Government Office of Tourism*)

Nelson Skuce (*The Citizen, Ottawa*)

Paul Taylor (*CKOY*)

Bob Walker (*The Gazette, Montreal*)

Norris Whitfield (*Canadian Broadcasting Corporation*)

Advisory Council

T.J. Allard, *Executive Vice-President, Canadian Association of Broadcasters*

Guy de Merlis, *Department of Labour*

Marcel Gingras, *Rédacteur en chef, Le Droit, Ottawa*

Martin Goodman, *Editor, Daily Star, Toronto*

Gordon Pape, *Publisher, Today Magazine, Toronto*

I. Norman Smith, *Former Editor, The Journal, Ottawa*

Christopher Young, *General Manager, Southam News Services, Ottawa*

William E. Beckel, *President of the University*

G. Stuart Adam, *Director of the School*

J.I. Jackson, *Registrar of the Faculties of Arts and Social Sciences*

James Downey, *Vice-President (Academic) of the University*

General Information

Bachelor of Journalism Honours Programs

The School of Journalism offers the degree of Bachelor of Journalism with Honours through two programs of study. Students entering the University after Senior Matriculation complete a four-year course of twenty-one credits. Students who are already university graduates may qualify for a one-year program of five and one-half credits.

The aim of these programs is not to train technologists; it is to give students the ability to investigate, interpret and communicate intelligently in any of the mass media. To this end, courses are designed to give students both professional skills and an understanding of how media function, in order that they can adapt to the various areas of modern journalism. Advantage is taken of the many resources outside the University provided by the location of the University in the national capital.

Journalism courses, with the exception of a few seminars, are offered in the Day division only. Optional courses in the four-year program, however, may be offered in the Evening division, and Second year requirements are sometimes offered in the Summer session.

Bachelor of Arts in Mass Communication

The School of Journalism offers Major and Honours undergraduate programs in Mass Communication. Candidates for the Major program are required to take a minimum of fifteen credits after Senior Matriculation and those in the Honours program, twenty credits after Senior Matriculation. The Mass Communication programs are provided for students with broad interests in mass communication in contemporary society who do not intend to pursue careers as professional journalists. The Honours degree is designed for students who intend to do graduate work in Communication or a related field.

Graduate Programs

The School of Journalism offers the Master of Journalism degree. A Master of Arts program with a specialization in Communications is offered through the Institute of Canadian Studies. For further details consult the Graduate Studies and Research Calendar.

Bachelor of Journalism Honours Four-Year Program

Program Requirements

Candidates for the degree of Bachelor of Journalism take a total of twenty-one credits, normally in this sequence:

First Year

Journalism 28.100 and 28.101*

A language course, preferably French*

Three approved options

*Students may substitute an approved option if they can demonstrate a proficiency in the French language to the degree required to report accurately in English on statements and research materials in French. Students whose native language is other than English may have the language requirement waived.

Second Year

Journalism 28.200 and 28.220

An approved credit in Canadian History, normally History 24.230* or 24.231*

Two approved options

*Students who expect to practise Journalism in another country may be advised to choose a different History course.

Third Year

Journalism 28.320, 28.321* and 28.351*

Three and one-half approved options. These options must include at least one but may include additional Third-year Journalism credits. Furthermore, a student should continue working towards the departmental requirement that before graduation four credits be taken in a field other than Journalism, with at least one of these courses at the 300 level or higher. The courses available as options are: Journalism 28.215, 28.300, 28.305*, 28.306*, 28.333, 28.352*, Mass Communication 27.201, 27.290 and 27.311

Fourth Year

Journalism 28.421 and 28.498. Three approved options. Students will note the departmental requirement described above regarding non-Journalism courses. The Journalism options offered in Fourth year are Journalism 28.400 and 28.490.

Combined Honours

Honours programs may be taken by students in the four-year undergraduate program in which Journalism is combined with other disciplines by arrangement. The minimum requirements are the same as those for the Bachelor of Journalism with Honours, with the exception that students in Combined Honours may write their graduating research paper for either of the participating departments.

Combined Honours, Journalism and Political Science

See p. 232 and consult the Department of Political Science.

Combined Honours, Journalism and Economics

See p. 133 and consult the Department of Economics.

Combined Honours, Journalism and English

See p. 141 and consult the Department of English.

Combined Honours, Journalism and Law

Course requirements are:

1. Journalism 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.421 and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498;

2. at least six but not more than nine credits in Law according to the following prescribed pattern: Law 51.100 or the combination of 51.101* and 51.102*; 51.200; at least one Law credit at the 300 level or higher; at least one other Law credit at the 400 level; if the degree sought is a Bachelor of Arts, an Honours essay in Law (51.498) or designated equivalent; but if the Honours essay is in Journalism, Law 51.490, directed studies in Law; at least one other Law credit which may not include Law 51.201;

3. a First-year Language credit other than English (preferably French);
4. an approved credit in Canadian History. (Students who plan to practise Journalism in another country may be advised to choose a different History course.);
5. approved options to make up a program total of twenty-one credits.

Combined Honours, Journalism and Sociology

Course requirements are:

1. Journalism 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.421, and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498;
2. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100; Sociology-Anthropology 56.200*; either Sociology 53.201* or Anthropology 54.201*; Sociology 53.370; Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours essay is written in Sociology, 53.306 is recommended); if the Honours essay is written in Sociology, Sociology 53.495 or 53.498 and two additional credits in Sociology, excluding Sociology-Anthropology 56.211, one of which must be taken at the 400 or 500 level, but, if the Honours essay is written in Journalism, three additional credits in Sociology, one of which must be taken at the 400 or 500 level;
3. a First-year Language credit other than English (preferably French);
4. an approved credit in Canadian History. (Students who expect to practise Journalism in another country may be advised to choose a different History course.);
5. approved options to make up a program total of twenty-one credits.

B.J. Honours with a Concentration in Psychology

Course requirements are:

1. Journalism 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.421, 28.498;
2. Psychology 49.100, 49.200*, 49.205*; two of 49.210*, 49.220*, 49.250*, 49.260*, 49.270*, 49.300*; four half-courses (two credits) in Psychology chosen in consultation with members of the Department from Psychology courses in the area of education, biopsychology, mental health, community social processes, perception, and social policy; and one optional credit in Psychology;
3. a First-year Language credit other than English (preferably French);
4. an approved credit in Canadian History. (Students who expect to practise Journalism in another country may be advised to choose a different History course.);
5. approved options to make up a program total of twenty-one credits.

Note:

The foregoing course pattern does not constitute a Combined Honours program in Journalism and Psychology.

Admission, Continuation and Graduation in Four-Year Program

Admission and Continuation

For admission to the First year, students are required to present either:

1. Completion of Qualifying University year with a grade-point average of 4.0 or better; or
2. The Ontario Secondary School Honour Graduation Diploma with a *minimum* 65% average and including a language other than English (French is recommended).

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Admission to Second year will be guaranteed only to First-year Journalism students who achieve a minimum B- in Journalism 28.100 and who maintain a 7.0 overall grade-point average in First year (calculated on five credits, including failures).

Students may normally be permitted to transfer into Second-year Journalism provided they have a minimum B- average in their First year and provided they make up First-year Journalism requirements: Journalism 28.100, 28.101* and a language, preferably French.

Students may not continue into 300-level or higher courses without satisfactory standing. Admission to these courses will be based on a minimum of: (a) C standing in Journalism 28.220; (b) an average of C+ in the three Journalism subjects taken for credit in the first two years: Journalism 28.100, 28.200 and 28.220; (c) an overall grade-point average of 4.0; (d) completion of Journalism 28.101*.

Note:

Journalism students must become reasonably proficient on the typewriter as soon as possible. All assignments in the professional journalism courses are done by typewriter.

Graduation Requirements

In addition to the graduation requirements of the Faculty of Arts, a candidate for the degree of Bachelor of Journalism with Honours must have a C+ average in the Journalism courses, with C grades or better in the reporting courses, a minimum C- in each other Journalism course, and be recommended for graduation by the School.

If after the regular examinations in any year a student is below the standard, grades must be raised in the appropriate subjects by writing grade-raising examinations.

One-Year Program

The holder of a Bachelor's or Master's degree in Arts or any field may be permitted to enrol in the one-year program and, if his or her background has reached the required standard, may qualify for the degree of Bachelor of Journalism with Honours in one academic year of five and a half credits. If the background is insufficient, one or more additional credits may be required for the degree.

Applicants for this program must contact the School of Journalism directly, before June 1, for application materials. The deadline for receipt of completed applications and supporting material is June 15.

The one-year program will normally consist of the following:

1. Journalism 28.321* (Career Seminars)
2. Journalism 28.434* (Media and Society I) and Journalism 28.435* (Media and Society II)
3. Journalism 28.461* (Perspectives on Modern Society) and Journalism 28.462* (Public Issues in Canada)
4. Journalism 28.440* (Media Practices) and Journalism 28.451* (Basic Journalism Law)
5. Journalism 28.441* (Reporting Laboratory I) and Journalism 28.442* (Reporting Laboratory II)
6. Journalism 28.499 (Honours Research Project)

Students enrolled in the one-year program as the Qualifying year of the Master's program in the communications stream are required to take five credits including a seminar in communications research, described in the course list under Mass Communication 27.201, and omitting Journalism 28.321*, 28.451* and 28.499. Students proceeding to their Master's degree in the specialized reporting stream are required to take five credits including a seminar in interpretative reporting, described in the course list under Journalism 28.444*, and omitting Mass Communication 27.201 and Journalism 28.499. Arrangements will be made for apprenticeship assignments to supplement such practical experience as graduate students may already possess. Please note the foregoing reference to proficiency in typewriting, and the paragraph relating to academic standing and grades. A student must obtain a minimum overall average of C+, a minimum C grade in the reporting courses and a minimum C- in each other Journalism course.

Classes of Honours

The grade-point system by which standing is expressed is outlined on p. 43.

The class of Honours degree for the one-year program students will be calculated as follows:

1. The Honours average is normally calculated on the basis of a weighting system which provides a weight of two for Journalism 28.441* and 28.442*, one for each pair of half-courses listed in the program and one for 28.499, that is, the marks for these courses are multiplied by the appropriate weight and the total divided by seven.

2. Students admitted to the one-year program will be notified of the value that has been applied to their overall previous academic work and this value will be included in the calculation of the overall average as if it represented the first three years of university work at Carleton.

Bachelor of Arts in Mass Communication

The School of Journalism offers Major and Honours undergraduate programs in Mass Communication. The admission and continuation requirements in the two programs are those set by the Faculty of Arts. It should be noted that professional journalism courses are open only to candidates for the Honours Journalism degree. These include Journalism 28.220, 28.320, 28.321*, 28.421.

Major Program

The minimum requirements for a Major in Mass Communication, which include five credits in Mass Communication, are:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. one credit chosen from Mass Communication 27.290, Journalism 28.305*, 28.306*, 28.351*, 28.352*;
3. Sociology-Anthropology 56.220, Political Science 47.200;
4. one credit in either Economics or Philosophy;
5. seven electives.

Note:

Students are normally expected to take at least two of the credits in requirements 3 and 4 in their First year.

The requirements for a Major program combining Mass Communication with another discipline are the same as for a Major, with the omission of requirement 2.

Honours Program

A candidate for a B.A. with Honours in Mass Communication requires nine credits in Mass Communication and three specified courses from other disciplines. The requirements are:

1. Mass Communication 27.111, 27.201, 27.211, 27.311, 27.401, 27.411, 27.497, Journalism 28.351*, 28.352*;

2. one credit chosen from Mass Communication 27.290, Journalism 28.305*, 28.306*;
3. Sociology-Anthropology 56.220 and Political Science 47.200;
4. one credit in either Economics or Philosophy;
5. eight electives.

Recommended sequence for B.A. Honours in Mass Communication

First Year

Mass Communication 27.111
Sociology-Anthropology 56.220
One credit in Economics or Philosophy
Two electives

Second Year

Mass Communication 27.201 and 27.211
Political Science 47.200
Two electives

Third Year

Mass Communication 27.311
Journalism 28.351*, 28.352*
One credit chosen from Mass Communication 27.290,
Journalism 28.305*, 28.306*
Two electives

Fourth Year

Mass Communication 27.401, 27.411, 27.497 (Honours Essay)
Two electives

Combined Honours

Students taking combined Honours in Mass Communication and another discipline are required to take seven credits in the School of Journalism. These courses are Mass Communication 27.111, 27.201, 27.211, 27.311, 27.401, 27.411, Journalism 28.351* and 28.352*. In addition, students are required to complete the Honours Research Essay or thesis in one of the Combined Honours Departments.

Combined Honours in Journalism and Mass Communication

Course requirements are:

1. Journalism 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.352*, 28.421, and, if the Honours degree sought is the Bachelor of Journalism, Journalism 28.498;
2. Mass Communication 27.201, 27.311, 27.401, 27.411, and, if the Honours degree sought is a Bachelor of Arts, Mass Communication 27.497;
3. Sociology-Anthropology 56.220, Political Science 47.200, and one credit in either Economics or Philosophy;

4. a First-year language credit other than English (preferably French);
5. an approved credit in Canadian History. (Students who expect to practise Journalism in another country may be advised to choose a different History course);
6. approved options to make up a program total of twenty-one credits.

Courses Offered

Courses offered by the School of Journalism are listed under "Journalism" in alphabetical order with all courses offered by the Faculties of Arts and Social Sciences. See p. 193.

Officers of the School

Director

G.B. Doern

Supervisor of Honours Studies

Donald Swartz

Faculty

Ian MacDonald

Rianne Mahon

Allan Maslove

Michael Prince

Sharon Sutherland

Donald Swartz

Eugene Swimmer

Richard J. Van Loon

George Warskett

V. Seymour Wilson

Stanley Winer

Committee of Management

Richard Abbott (*Law*)

D. Bellamy (*Political Science*)

G.B. Doern (*Public Administration*)

R. Mahon (*Public Administration*)

B. McFarlane (*Sociology-Anthropology*)

A. Maslove (*Public Administration*)

M. Prince (*Public Administration*)

T.J. Ryan (*Dean, Faculty of Social Sciences*)

T.K. Rymes (*Economics*)

S. Sutherland (*Public Administration*)

D. Swartz (*Public Administration*)

E. Swimmer (*Public Administration*)

R.J. Van Loon (*Public Administration*)

J. Waugh (*Commerce*)

V.S. Wilson (*Public Administration*)

Five Student Representatives (three graduate, two undergraduate)

General Information

The School of Public Administration was established in 1953 through the assistance of a generous grant from the Atkinson Charitable Foundation.

The programs of the School have been developed out of an awareness of the need to provide a general education that will familiarize public servants and students contemplating a career in government service with the main organizational, political, economic and legal elements of the environment of the public service.

The Honours B.A. program is planned on the assumption that the most suitable education for a person desiring to be a capable public administrator is broad and general in base, with an emphasis on political economy. While it is designed to be of particular use to

students contemplating careers in public employment, it also provides a sound general education for those considering the legal profession or business.

The Certificate program, on the other hand, will be most helpful to those who desire training in fields directly related to Public Administration. This course is designed to encourage public servants without university training to broaden their background. Since they are allowed degree credit for this work, they will also be encouraged, upon its completion, to continue toward a Bachelor of Arts degree.

Public employees not interested in registering for studies leading to a degree, a certificate, or a diploma should note that they may take, as Special students, any of the subjects listed in Public Administration programs for which they have the requisite background. Their attention is directed also to non-credit extension courses related to Public Administration which are offered from time to time by the University. Details may be obtained from the School of Continuing Education.

As Carleton University is located in the capital city and enjoys close relations with many government agencies, students of Public Administration may profit greatly from the unique advantages thus offered. Such institutions as the Library of Parliament, The National Library, the Public Archives, Statistics Canada, and the specialized libraries of the several government departments, all offer unusual opportunities for study in Ottawa.

Bachelor of Arts with Honours in Public Administration

Qualifying University and First years offered in both Day and Evening divisions, last three years offered in Day division only.

Admission Requirements

Same as for Faculty of Social Sciences (See p. 91.) Students not meeting Honours requirements for admission to the First year will be considered for transfer to the Second year after successfully completing the First year in a general Bachelor of Arts program.

Requirements for continuation in Honours are found on pp. 91-92.

Course Requirements

Candidates for the degree of Bachelor of Arts with Honours in Public Administration must satisfy all requirements for the B.A. with Honours.

The School requires Honours students to have a reading knowledge of French. As a minimum language requirement students must complete at least one full course in French during their First or Second undergraduate years. After the language placement test is taken, students will be streamed into one of the following:

French

- 20.100 Elementary French
- 20.101 Intensive Introductory French (2 credits)
- 20.102 Intermediate French (A)
- 20.103 Intermediate French (B)
- 20.108 Advanced French for Non-Majors

Students wishing exemption from this requirement must satisfy the School of Public Administration that they meet the minimal language proficiency required. Depending on individual preferences, and performance in these First-year courses, students wishing to proceed further in French language training and language appreciation could choose from the following options. This choice must be made in consultation with the French Department.

French

- 20.111 Advanced French (A)
- 20.267* La littérature du XIXe siècle au Canada français
- 20.268* La littérature du XXe siècle au Canada français

The School strongly encourages students to continue gaining proficiency in the French language by selecting at least one of their options in the French Department.

Fourth-year students who select the Honours Essay (Public Administration 50.498) must have a detailed outline of the essay approved by the Supervisor of Honours Studies and the student's supervisor by early October.

Students must achieve a grade of B- or better in the Honours Essay and must follow the essay submission and registration requirements as outlined on pp.91-92.

First Year

Students contemplating Honours in Public Administration must take Economics 43.100 and Political Science 47.100 in the First year. Students are advised to meet the School's language requirement in their First year. If this is not feasible then the language requirement must be completed by the Second year of the undergraduate program.

*Second Year***1. Accounting**

- 41.100 An Introduction to Accounting, or
- 41.101* Principles of Financial Accounting, and
- 41.102* Management Accounting

2. Economics

- 43.201* Introduction to Micro-Economics Theory and Analysis, and
- 43.211* Introduction to Macro-Economics Theory and Analysis

3. Law

- 51.205 Introduction to Public Law

4. Political Science

- 47.200 Canadian Government and Politics

5. One approved full-course option (French requirement must be completed if not taken in First year)

Third Year

1. One full course equivalent chosen from:

Law

- 51.353 Civil Liberties and Human Rights
- 51.354* Law and Native Peoples of Canada
- 51.374 Local Government Law
- 51.380 Law of Environmental Quality
- 51.445* Labour Relations in the Public Service
- 51.450 Canadian Constitutional Law
- 51.456* Administrative Law I
- 51.457* Administrative Law II

2. Management Studies

- 42.310* Introduction to Administrative Processes
- 42.311* Introduction to Organizational Behaviour

3. One of:

Political Science

- 47.270 Political Enquiry

Economics

- 43.220 Statistical Methods in the Social Sciences

4. Political Science

- 47.340 Canadian Public Administration

5. One approved full course option

*Fourth Year***1. Economics**

- 43.440 Public Finance

2. Political Science

- 47.401 Policy Making in Canada.

3. Public Administration

- 50.400 Public Administration Seminar

4. Public Administration

- 50.498 Honours Essay, or
- 50.499 Honours Comprehensive

5. One approved full course option

Certificate in Public Services Studies

Offered in both Day and Evening divisions.

This course is designed primarily for public employees who seek special training in public service subjects at the undergraduate level.

Courses taken for the Certificate are normally creditable towards a Bachelor of Arts degree and a transfer student from the Certificate program into such a degree program will be normally required to take at least nine further courses in addition to those required for the Certificate, to be recommended for the degree. At least five of the courses required for a Bachelor of Arts degree must be completed after the awarding of the Certificate.

Full-time candidates for the Certificate are invited to inquire about possible financial aid.

Admission Requirements

Junior Matriculation. The cases of experienced applicants without Junior Matriculation will be considered on their merits and the completion of certain subjects at Carleton may be required before admission. Candidates may be admitted with advanced standing, but must complete at least five courses for the Certificate at Carleton University.

Individuals who have completed an undergraduate degree are not considered for admission to the Certificate program. They are encouraged, however, to investigate the undergraduate and graduate degree and diploma programs offered by the School.

Course Requirements

The following courses are required and the following order is suggested:

1. Political Science 47.100
2. Economics 43.100
3. History 24.230 or Economics 43.325
4. Political Science 47.200
5. Political Science 47.340
6. One other chosen in consultation with the Director according to the needs of the students.

Academic Standing

A candidate for the Certificate must obtain a grade of C or better in at least half of the courses taken at Carleton University for the Certificate.

Courses Offered

Courses offered by the School of Public Administration are listed under "Public Administration" in alphabetical order with all courses offered by the Faculties of Arts and Social Sciences. (See p. 251.)

Institute of Soviet and East European Studies

Members of the Institute

Director

Carl H. McMillan

Supervisor of Graduate Studies

Carl H. McMillan

Supervisor of Honours Studies

J.L. Black

Associated Members of the Faculty

Glynn R. Barratt (*Russian*)

Robert Bedeski (*Political Science*)

J.L. Black (*History*)

Bohdan R. Bociurkiw (*Political Science*)

R.L. Carson (*Economics*)

R. Carter Elwood (*History*)

V.I. Grebenshikov (*Russian*)

Angelina Lewinson (*Russian*)

Carl H. McMillan (*Economics*)

George Melnikov (*Russian*)

J. George Neuspiel (*Law*)

Gertrud Neuwirth (*Sociology*)

Adam Podgorecki (*Sociology*)

Teresa Rakowska-Harmstone (*Political Science*)

George Roseme (*Political Science*)

Radoslav Selucky (*Political Science*)

Emilie Stichling (*Russian*)

Lloyd Strickland (*Psychology*)

John W. Strong (*History*)

Halina Van de Lagemaat (*Russian*)

Paul Varnai (*Russian*)

General Information

A Committee on Soviet and East European Studies was formed in 1963 to foster interdisciplinary studies, research, conferences and publications in this area. The Committee was transformed into the Institute of Soviet and East European Studies in 1970. Faculty members from eight disciplines (Economics, Geography, History, Law, Political Science, Psychology, Russian and Sociology) participate in the Institute's programs. They are joined on an occasional basis by visiting scholars (including visitors from the U.S.S.R. and Eastern Europe).

On the undergraduate level, the Institute offers an interdisciplinary Bachelor of Arts (Honours) program in Soviet and East European Studies. The Institute also administers a program of interdisciplinary studies leading to a Master of Arts degree in Soviet and East European Studies, the only one of its kind in Canada. The curricula for both programs are offered largely through participating departments. Students in the Institute's programs are eligible to apply, under the academic exchange agreement between Carleton and

the University of Leningrad, for nine months of study in the Soviet Union. A similar exchange agreement exists with the University of Warsaw; and an agreement with the Institute of Cultural Studies in Budapest provides for graduate studies at post-secondary institutions in Hungary. Students participating in the Institute's programs have at their disposal a specialized periodicals reading room in the Institute, the University library's rapidly expanding collection of books, documents, periodicals and micro-materials on the Soviet Union and Eastern Europe and the extensive holdings of the National Library and other specialized libraries in Ottawa.

Each year the Institute organizes a series of public seminars and lectures by invited specialists from outside the university, on a broad range of topics bearing on the Soviet Union and Eastern Europe. The Institute also sponsors frequent conferences and colloquia and promotes extension courses in the area. The Institute maintains organized research programs in two broad areas: East-West relations (with current emphasis on their economic, legal and military-strategic aspects) and nationalities problems and related questions of minority rights in the U.S.S.R. and Eastern Europe. The Institute issues a regular series of working papers, special studies and bibliographic materials, and has sponsored eight volumes in the *Carleton Series in Soviet and East European Studies*.

Because of its interdisciplinary character, a degree in Soviet and East European studies provides a useful basis for a career in government service either at home or abroad. The expansion of East-West relations has increased the demand for regional specialists in the business and financial communities. For many students, studies in Soviet and East European affairs constitute a convenient first step to more specialized professional or academic training.

Honours Program

The objective of the Honours program is to equip students with indispensable linguistic tools and to provide, through an interdisciplinary approach, an integrated knowledge of the cultures, historical developments and contemporary social, economic and political systems of the area. The program leads to the degree of Bachelor of Arts with Honours in Soviet and East European Studies.

Combined Honours Program

A Combined Honours degree between Soviet and East European Studies and the School of Journalism is offered to interested students.

Course requirements for this degree are planned by the Director of the Institute in consultation with the Director of the School of Journalism, and are designed to accommodate the students' interests and needs.

Combined Honours programs are also possible in conjunction with other disciplines and are governed by the regulations of the departments concerned.

Further details on these programs may be obtained from the Institute.

Admission Requirements

Admission to the program must be approved by the Institute of Soviet and East European Studies and by the Faculty of Social Sciences Committee on Honours. Students with at least a 65% average in Senior Matriculation or a C standing in the Carleton Qualifying University year may be enrolled in the program in the First year. With the consent of the Institute, students may also enter the program in subsequent years provided they have maintained Honours standing and have completed the program's course requirements to that point.

Course Requirements

A total of twenty, full-course credits is required for the Honours B.A. in Soviet and East European Studies.

All candidates are normally required to take three full courses in the Russian language beyond the introductory level: Russian 36.150 (Intermediate Russian, for which Russian 36.100, or its equivalent, is a prerequisite), Russian 36.200 (Advanced Russian) and either Russian 36.303 (Russian Translation) or Russian 36.203 (Russian Grammar). Students are normally expected to complete their language requirements by the end of their Third year. Other Russian and Eastern European language and literature courses may be selected as additional components of the candidate's Honours program (see below).

In the First year, courses must be chosen, in consultation with the Honours Supervisor, from the 100 level, or from higher level courses open to First-year students. These courses should be selected as preparation for more specialized Soviet and East European area courses offered in the various disciplines. Introductory courses in economics, European history and political science (as well as other introductory courses in the social sciences) are therefore normally taken at this stage.

In the following three years, candidates must select seven additional full-course credits (representing no less than three different disciplines) from the area-related courses offered by participating departments and listed below. The following three courses are regarded as forming the core of the Institute's undergraduate area studies program: Economics 43.370 (covering the Soviet and East European economies), History 24.260 (Russian and Soviet History) and Political Science 47.320 (Soviet Government and Politics) and all three are strongly recommended to all candidates for the degree. In addition, an Honours essay is required in the Fourth year (see below).

Four additional courses are to be selected, in consultation with the Honours Supervisor, from the general offerings of the departments of Economics, Geography, History, International Affairs, Law, Political Science, German, Russian (or other relevant modern languages) and Sociology.

Courses Offered by Participating Departments

Russian

- 36.201★ Russian Conversation
- 36.203 Russian Grammar
- 36.250 Russian Classics of the Nineteenth Century
- 36.260 Russian Literature in Translation — Nineteenth and Twentieth Centuries
- 36.290 Twentieth-Century East-European Literature in Translation
- 36.300 Russian Style and Composition
- 36.301★ Advanced Russian Conversation
- 36.303 Russian Translation
- 36.330 Russian Early Classics
- 36.350 Literature and the Russian Revolution
- 36.360 Studies in Russian Life and Culture
- 36.399 Introduction to Methods of Research
- 36.415 History of the Russian Language
- 36.430 Russian Realism of the Nineteenth Century
- 36.440 Contemporary Russian Drama
- 36.450 Contemporary Russian Literature (After 1935)
- 36.460 Old Russian Literature
- 36.470 Modern Russian Literature
- 36.490★ Special Subject
- 36.491 Tutorial
- 36.493★ Translation Tutorial

Ukrainian

- 36.216 Advanced Ukrainian

Slavic Languages

- 36.390 Slavic or Hungarian Language Tutorial

German

- 22.380★ Twentieth Century Studies (Literary and Linguistic)

Geography

- 45.351 Geography of the Northlands
- 45.360★ Soviet Union
- 45.361★ East Europe
- 45.571★ Selected Studies in the Human Geography of Arctic and Subarctic

History

- 24.260 History of Russia and the U.S.S.R.
- 24.360 History of the U.S.S.R.
- 24.361 The Russian Empire
- 24.366★ Modern East Central Europe
- 24.460 Selected Problems in Russian History
- 24.461 Selected Problems in Soviet History
- 24.560 Revolutionary Russia, 1808-1921
- 24.588 Historiography (section dealing with Modern Russia)

Economics

- 43.365* The Economics of Planning
- 43.370 Socialist Economic Systems
- 43.470 Comparative Economic Systems
- 43.536* Comparative Economic Systems I
- 43.537* Comparative Economic Systems II

Law

- 51.420* International Economic Law II
- 51.421* International Economic Law III
- 51.463 Public International Law
- 51.488 Socialist Legal Systems

Political Science

- 47.314* Eastern European Politics
- 47.316* Revolution
- 47.320 Soviet Government and Politics
- 47.330* Politics and Literature
- 47.333 Modern Political Thought and Ideology
- 47.431* Marxist Thought
- 47.432* Contemporary Marxism
- 47.461* Soviet Foreign Policy
- 47.462* International Communist Movement
- 47.483* Foreign Politics of Major East Asian Powers
- 47.514* Comparative Communist Politics; Theory and Practice
- 47.515* Comparative Communist Politics; Selected Aspects
- 47.516* Selected Problems in Soviet Politics

International Affairs

- 46.535* Political Economy of East-West Relations
- 46.566* Integration in Eastern Europe

Sociology

- 53.345 Stratification and Mobility
- 53.350* Political Behaviour
- 53.545 Power and Stratification
- 53.550 National Unity in Multi-ethnic Societies
- 53.583 Marx and Neo-Marxists

Soviet Studies

- 55.400* Aspects of Eastern Europe
- 55.401* Aspects of Eastern Europe
- 55.402* Aspects of Eastern Europe
- 55.490* Tutorial in Soviet and East European Studies
- 55.491* Tutorial in Soviet and East European Studies
- 55.492* Tutorial in Soviet and East European Studies
- 55.500* Interdisciplinary Seminar on the Soviet Union and Eastern Europe.
- 55.501*

Note: Not all of the foregoing courses are offered in any given year and not all combinations of courses are possible. See departmental listings for further details.

Honours Essay

Students taking Honours in Soviet and East European Studies must write a major research essay (Soviet Studies 55.498) during their final year. This essay

carries the weight of one full course. The subject for research will be selected in consultation with the Institute and a supervisor will be assigned. An oral defence of the essay is required.

Academic Standing

Students must maintain Honours standing as prescribed by the general requirements of the Faculty of Social Sciences.

Graduate Program

The Institute offers an interdisciplinary Master of Arts program in Soviet and East European Studies with the participation of faculty from the Departments of Economics, Geography, History, Law, Political Science, Russian and Sociology, as well as invited specialists from other universities and visiting scholars from the U.S.S.R. and Eastern Europe. It is designed for students wishing to acquire specialized knowledge of the Soviet and East European area, including proficiency in Russian, before proceeding towards a doctoral degree in one of the disciplines represented in the program, either at Carleton or another university. The program is also suitable for students aspiring to a professional, business or government career which requires knowledge of the area. For details, consult the Graduate Studies and Research Calendar.

Courses Offered

Courses offered by the Institute of Soviet and East European Studies are listed under "Soviet and East European Studies" in alphabetical order with all courses offered by the Faculties of Arts and Social Sciences. See p. 279.

School of Commerce

For details of programs offered by the School see pp. 95-99.

General Information

Accounting is basically communication — communication of the results of business activity to interested parties such as shareholders, investors, statisticians, governments, and also communication to business management of the information needed to aid in managing the enterprise.

As firms continually become larger and more complex, the need for information on financial position and results of operations becomes greater and at the same time this information becomes more difficult to obtain and interpret.

A knowledge of the means by which the accounting process records and summarizes transactions and attempts to present the results in a meaningful manner is necessary to anyone who uses or relies on financial statements.

Students who, after graduation in Commerce, intend to proceed to professional accounting designations: Chartered Accountant (C.A.), Certified General Accountant (C.G.A.), or Registered Industrial Accountant (R.I.A.), should consult with members of the Department.

Courses Offered

Accounting 41.100

An Introduction to Accounting

A course open only to students registered in the Commerce program, and to declared Major or Honours students in Economics. Accounting method; concepts of income determination and asset valuation; accounting information and managerial decisions.

Day division: Lectures and problems three hours a week.

Accounting 41.101*

Principles of Financial Accounting

Discussion of the concepts of asset valuation and income measurement underlying the preparation and interpretation of financial statements.

Day and Evening divisions, First term: Lectures and problems three hours a week.

Accounting 41.102*

Management Accounting

An introduction to the problems of the use of accounting data for the purposes of planning and control of operations.

Prerequisite: Accounting 41.101*

Day and Evening divisions, Second term: Lectures and problems three hours a week.

Accounting 41.200

Intermediate Accounting

Further development of problems of revenue recognition and asset valuation.

Prerequisite: Accounting 41.100 or 41.101* and 41.102*. Day and Evening divisions: Lectures and problems three hours a week.

Accounting 41.301*

Accounting for Business Combinations

Consideration of the accounting problems associated with business combinations. Particular attention will be given to the preparation of consolidated financial statements. Discussion may also extend to financial reporting and diversified companies, reorganizations, etc. Selection of some topics may vary from year to year.

Prerequisite: Accounting 41.200.

Day and Evening divisions, Second term: Lectures and seminars, three hours a week.

Accounting 41.306*

Financial Reporting Problems

Discussion and analysis of selected problems relating to the presentation and interpretation of accounting information on financial position and operating performance. Material for discussion will be drawn from real situations, and from cases. Enrolment in this course may be restricted to thirty students per section.

Prerequisite: Accounting 41.200.

Day and Evening divisions, First term: Lectures three hours a week.

Accounting 41.325*

Cost Accounting

The use of accounting information for purposes of cost control and performance evaluation. Topics will include: analysis and control of elements of cost; design and use of job order, process cost and standard cost systems; analysis of cost variances; variable costing.

Prerequisite: Accounting 41.100 or 41.102*.

Day and Evening divisions, Both terms: Lectures three hours a week.

Accounting 41.326*

Management Accounting Systems

Discussion of the role of accounting in the functional areas of forward planning, performance evaluation, and the control of operations. Special attention will be given to the problems of forecasting and long-range planning.

Prerequisite: Accounting 41.325*, or permission of the School.

Day and Evening divisions, Second term: Lectures three hours a week.

Accounting 41.400* (part 41.400)

Accounting Theory

A study of the evolution of accounting theory with emphasis on concepts of income and current issues.

Prerequisite: Accounting 41.200 (41.301* and 41.306* are recommended) and permission of the School.

Day division; First term: Lectures and seminars three hours a week.

Accounting 41.401* (part 41.400)

Research Topics in Accounting

An examination of approaches to research in accounting and an evaluation of selected topics of current interest in accounting theory.

Prerequisite: Accounting 41.400* and permission of the School.

Day division; Second term: Lectures and seminars two hours a week.

Accounting 41.412*

Auditing

A course in auditing theory, methodology and application.

Prerequisite: Accounting 41.200 (41.301* and 41.306* are recommended) and permission of the School.

Enrolment may be restricted.

Evening division, Both terms: Lectures and seminars three hours a week.

Courses Planned for Summer School and Evening Division

Summer School

The following courses are offered each Summer:

Accounting 41.101*, 41.102*.

Evening Division

Core courses in Accounting are available each year in the Evening division. These include Accounting 41.100, 41.101*, 41.102*, and 41.200.

Offerings of optional courses are subject to the availability of instructors. Offerings now planned for each of the next five years are: Accounting 41.301*, 41.306*, 41.325*, 41.326*, 41.412*.

See Department of Sociology and Anthropology, p. 264.

Department of Art History

Officers of Instruction

Chairman

David Goodreau

Supervisor of Honours

David Burnett

Supervisor of Majors

David Goodreau

Professor

George Swinton

Associate Professors

C. Malcolm Brown

David Burnett

David Goodreau

F. Hernandez

Assistant Professor

Diane le Berrurier

Adjunct Professors

R.H. Hubbard

D. Reid (*Art Gallery of Ontario*)

M.C. Taylor (*National Gallery of Canada*)

Sessional Lecturers

A. Davis

C. Kalmacoff

L. Koltun

N. Luckyj

R. Phillips

Slide Curator

B. Stevenson

Assistant Slide Curator

K. Joy

General Information

The Department's offerings range from beginning survey courses to advanced courses leading to the Bachelor of Arts Major and Honours degrees. A Master of Arts program with a specialization in Art History is offered through the Institute of Canadian Studies.

Courses Open to First Year Students

The following courses are open to First-year students: Art History 11.103*, 11.104*, 11.110*, 11.111*, 11.115*, 11.200*, 11.201*, 11.210*, 11.220*, 11.230*, 11.235*, 11.240*, 11.250*, 11.260*.

Major Programs

Major in Art History

The Major in Art History consists of a minimum of six credits in Art History, comprising five credits beyond the 100 level, to include:

- (a) One credit at the 100 level;
- (b) Two credits at the 200 level;
- (c) Two credits at the 300 and 400 level;
- (d) One additional credit beyond the 100 level.

Courses at the 400 level, excluding Art History 11.475*, 11.476*, 11.490*, 11.491* and 11.499, may be taken by students in their Third year who have the appropriate course prerequisite or permission of the Department. It is recommended that Majors in Art History have the equivalent of at least a First-year course in a language suitable to their program. French 20.102, 20.103, 20.106* or 20.108, German 22.115, Italian 26.115 and Spanish 38.115 are recommended.

Combined Majors

Major students combining Art History with another subject must include five credits in Art History, of which one must be at the 300 level.

Honours Programs

Honours in Art History

The Honours program in Art History consists of a minimum of ten credits in Art History, including nine beyond the 100 level.

1. For the First, Second and Third year programs refer above to the course pattern outlined in the section *Major in Art History*.

2. Honours students must take four credits in Art History at the 400 level, including Art History 11.490* and 11.491*, or 11.499.

3. Students will be required to demonstrate a proficient reading knowledge of either French, German, Italian, or another language if relevant to their program. A grade of B- or higher in French 20.102, 20.103, 20.106*, 20.108, German 22.115, Italian 26.115 or Spanish 38.115 will be accepted in lieu of a reading examination. If graduate study in Art History is contemplated, the study of French and German is strongly recommended.

4. Courses must be chosen in consultation with the Honours Supervisor.

Combined Honours

For Honours programs combining Art History with another subject, the minimum requirement is seven credits in Art History chosen in consultation with the Department, which must include two Art History credits at the 400 level.

Students who wish to pursue programs in museum training on the postgraduate level are advised that courses in general chemistry are strongly recommended.

Courses Offered

Art History 11.103*

Arts of the Native Peoples: The Americas

This course is designed as an introduction to the arts and architecture of the indigenous civilizations in Mexico, Central America, and the Andean region of South America before the Spanish conquest, and of the traditional art forms of the Indian and Inuit peoples of North America.

Evening division, Second term: Lectures three hours a week.

C. Kalmacoff

Art History 11.104*

Arts of Native Peoples: Africa and Oceania

This course is designed as an introduction to the art forms of the native peoples of tropical Africa, Australia, New Zealand, and the tropical islands of the Pacific.

Evening division, First term: Lectures three hours a week.

R. Phillips

Art History 11.110*

Western Art: Prehistory to Medieval

This course surveys the art and architecture of the western world from the Paleolithic era to the end of the Gothic period.

Evening division, First term: Lectures three hours a week. In 1980-81 also offered off campus. Evening division: Sir Robert Borden High School.

F. Hernandez

Art History 11.111*

Western Art: Renaissance to the Present

This course surveys the art and architecture of the western world from the beginning of the Renaissance to the present day.

Day division, First term; Evening division, Second term: Lectures three hours a week. In 1980-81 also offered off campus. Evening division: Sir Robert Borden High School.

M.L. Funke-Campbell, F. Hernandez

Art History 11.115*

Art as Visual Communication

This course examines the roles of art in communication and visual thinking. The purpose of the course is to focus on the non-verbal communication of ideas, and to raise and broaden the individual's awareness of art and various visual media. The course explores themes such as what constitutes quality in art, can an interface exist between art and the popular visual media, and how the ideas of the artist are conveyed by means of a physical artifact. Topics include visual and

tactile elements in art, design as visual organization and composition, levels of meaning in subject matter, materials and techniques of historical and contemporary visual expressions, problems of objectivity and subjectivity in visual experience, and aesthetic theories of value judgment.

Evening division, First term: Lectures three hours a week.

G. Swinton

Art History 11.200*

Canadian and American Art to 1900

This course surveys art and architecture in North America from the beginning of the European settlement to about 1900.

Evening division, First term: Lectures three hours a week.

N. Luckyj

Art History 11.201*

Canadian and American Art: The Twentieth Century

This course surveys art and architecture in North America from about 1900 to the present day.

Day division, First term, Evening division, Second term: Lectures three hours a week.

D. Burnett, N. Luckyj

Art History 11.210*

Greek and Roman Art and Archaeology

Offered in the Department of Classics as Classical Civilization 13.232*.

Art History 11.220*

Western Medieval Art

The development of Western medieval art from the earliest Christian productions through the late Gothic period is studied, with some reference to Eastern medieval art for purposes of comparison.

Evening division, Second term: Lectures three hours a week.

D. le Berrurier

Art History 11.230*

Italian Renaissance Art

This course is designed to survey painting, sculpture and architecture in Italy from the fourteenth through the sixteenth century.

Not offered 1980-81.

Art History 11.235*

Northern Renaissance Art

This course examines the development of Flemish and German Renaissance art.

Not offered 1980-81.

Art History 11.240*

Baroque and Early Romantic Art

This course is designed to survey painting, sculpture and architecture in Europe from the Baroque period of the seventeenth century through the Rococo and the beginnings of Romantic art in the eighteenth century.

Evening division, First term: Lectures three hours a week.

D. Goodreau

Art History 11.250*

Romantic and Early Modern Art

This course surveys painting and sculpture in Europe from the Romantic period, through Impressionism to the beginnings of abstract art.

Day division, Second term: Lectures three hours a week.

F. Hernandez

Art History 11.260*

Modern Art

This course surveys the major artistic groups and personalities working in Europe and North America from the beginnings of abstract art to the present.

Evening division, First term: Lectures three hours a week.

D. Burnett

Art History 11.300*

Canadian Painting

This course, designed to study particular aspects of painting in Canada, emphasizes artists working in the nineteenth and early twentieth centuries.

Day division, Second term: Lectures three hours a week.

M.L. Funke-Campbell

Art History 11.301*

Topics in Contemporary Canadian Art

This course examines in depth the art of selected groups and individuals working in Canada from the Second World War to the present.

Day division, Second term: Lectures three hours a week.

D. Burnett

Art History 11.302*

Canadian Architecture

This course is designed to study the cultural history of Canada as expressed through its architectural heritage. Selected buildings and complexes from the earliest settlements through the early twentieth century within the French and English Canadian architectural traditions are examined.

Evening division, First term: Lectures three hours a week.

Art History 11.303*

Prehistoric Art of the Canadian Arctic

This course studies the art of the Canadian Arctic during the past 3,000 years, and examines and compares archaeological data and regional art forms.

Evening division, Second term: Lectures three hours a week.

G. Swinton

Art History 11.304*

Pre-Classical Greek Art and Archaeology

Offered in the Department of Classics as Classical Civilization 13.331*.

Art History 11.305*

American Architecture

This course studies the cultural history of the United States as expressed through its architectural heritage. Selected buildings and complexes from the earliest settlements through the early twentieth century are examined.

Evening division, Second term: Lectures three hours a week.

D. Goodreau

Art History 11.310*

Etruscan and Roman Art

This course studies Etruscan art and the development of Roman art and architecture through the Constantinian period. (Also listed as Classical Civilization 13.334*.)

Day division, Second term: Lectures three hours a week.

D. le Berrurier

Art History 11.320*

Byzantine Art

This course examines the sources and the development of the arts in the Byzantine Empire as well as the influence of these artistic productions on those of neighbouring countries and Western Europe.

Day division, First term: Lectures three hours a week.

D. le Berrurier

Art History 11.325*

Russian Art

The development of Russian art is studied from its origins through the seventeenth century with an emphasis on Byzantine influences as opposed to local characteristics.

Not offered 1980-81.

Art History 11.327*

Gothic Art

The development of Gothic architecture and monumental sculpture in Northern and Southern Europe from its origins in the twelfth century through the fifteenth century will be investigated.

Evening division, First term: Lectures three hours a week.

D. le Berrurier

Art History 11.330*

Florentine Renaissance Art: Masaccio through Raphael

This course examines Florentine art in its development from late Trecento ideas to the emergence of the High Renaissance vocabulary.

Not offered 1980-81.

Art History 11.331*

Venetian Renaissance Art

This course examines the art of the Venetian Republic, from the Basilica of San Marco to the emergence of a Renaissance vocabulary with Bellini, Giorgione, Titian, Veronese and Tintoretto, within the context of North Italian painting.

Not offered 1980-81.

Art History 11.340*

Studies in Baroque Art

This course examines selected topics of seventeenth-century art and architecture.

Not offered 1980-81.

Art History 11.350*

British Art and Architecture

Art and architecture in Britain from the early sixteenth to the mid-nineteenth century are studied.

Evening division, First term: Lectures three hours a week.

D. Goodreau

Art History 11.355*

Late Nineteenth-Century Art in France

This course defines the roots of the major modern movements of early twentieth-century art through an examination of the principal artists and trends in French painting from Manet to Cézanne. Special attention is also given to the major Impressionist and post-Impressionist artists including Monet, Renoir, Seurat, van Gogh and Gauguin.

Day division, First term: Lectures three hours a week.

G. Swinton

Art History 11.360*

Twentieth-Century Art: Selected Topics

This course examines in depth the art and ideas of selected groups of artists working in Europe and the United States during the twentieth century.

Evening division, Second term: Lectures three hours a week.

D. Burnett

Art History 11.368*

Modern Architecture: The Nineteenth Century

This course covers selected topics in nineteenth-century architecture and urban planning in Europe and North America from the Gothic Revival to American Commercial architecture.

Not offered 1980-81.

Art History 11.369*

Modern Architecture: The Twentieth Century

This course considers The Bauhaus and the New Brutalism, and also includes such architects as Gaudi, Wright, Le Corbusier, Mies van der Rohe and Buckminster Fuller.

Not offered 1980-81.

Art History 11.375*

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course will be announced well in advance of the period of registration.

Day division, First term: Hours to be arranged.

Art History 11.376*

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course will be announced well in advance of the period of registration.

Day division, Second term: Hours to be arranged.

Art History 11.400*

Canadian Artists and Architects

In 1980-81 this seminar considers the artists of the Group of Seven as individual artists and as members of the nationalist movement in Canadian painting which they created. The movement is studied in the contexts of Canadian nationalism and the history of modern art. Prerequisite: Art History 11.300* or permission of the Department.

Day division, First term: Seminar two hours a week.

A. Davis

Art History 11.403*

Contemporary Inuit Art in the Context of Art History

This course investigates the development of Inuit art since the beginning of the nineteenth century, with emphasis given to regional and local stylistic characteristics and the works of individual artists.

Evening division, First term: Seminar two hours a week.

G. Swinton

Art History 11.420*

Early Christian and Byzantine Manuscript Illustration

This seminar studies the origins of the codex illustrations and concentrates on the development of religious and secular manuscripts from the fourth century through the fifteenth century.

Prerequisite: Art History 11.320* or permission of the Department.

Day division, Second term: Seminar two hours a week.

D. le Berrurier

Art History 11.421*

Early Medieval and Byzantine Ivories

This course focuses on the origins of the ivory carving tradition and the various types of secular and religious productions from the earliest examples through the tenth century in Western medieval art and through the fifteenth century in Byzantine art.

Prerequisite: Art History 11.320* or permission of the Department.

Not offered 1980-81.

Art History 11.425*

Byzantine and Russian Icon Painting

This seminar course focuses on the origins and development of Byzantine and Russian icon painting through the sixteenth century.

Prerequisite: Art History 11.320* or 11.325* or permission of the Department.

Not offered 1980-81.

Art History 11.440*

Baroque Art

This seminar examines selected topics of seventeenth-century art and architecture.

Prerequisite: Art History 11.340* or permission of the Department.

Not offered 1980-81.

Art History 11.450*

British Landscape Painting

This seminar examines the rise and development of the British school of landscape painting in the eighteenth and nineteenth centuries. Study also includes varieties of media and techniques, and although the main focus is on British landscape art, North American and European examples are introduced for comparative purposes.

Prerequisite: Art History 11.350* or permission of the Department.

Not offered 1980-81.

Art History 11.452*

Goya: Painter and Printmaker

This course examines the style and imagery of Goya's paintings and graphics, as well as the range of attitudes and opinions that critics and art historians have held about Goya's work.

Prerequisite: Art History 11.240* or 11.250* or permission of the Department.

Evening division, Second term: Seminar two hours a week.

D. Goodreau

Art History 11.460*

Twentieth-Century Art Theory and Criticism

In this course the place of the critic and of the artist as theorist is examined in relation to the painting and sculpture of the twentieth century.

Prerequisite: Art History 11.260*, or 11.360* or permission of the Department.

Not offered 1980-81.

Art History 11.465*

Paul Klee and German Expressionism

The art and ideas of Paul Klee are discussed within the context of the German Expressionist movement.

Prerequisite: Art History 11.260*, or 11.360* or permission of the Department.

Not offered 1980-81.

Art History 11.470*

Historical Studies in Drawing

The history of the drawing as a work of art from the fifteenth century to the present is studied in this seminar, using in large part original examples from the National Gallery of Canada. Emphasis is placed on the expressive possibilities of the various media and on connoisseurship. Enrolment limited.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Art History 11.475*

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course will be announced well in advance of the period of registration.

Prerequisite: Fourth-year Honours standing.

Day division, First term: Hours to be arranged.

Art History 11.476*

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The topic of this course will be announced well in advance of the period of registration.

Prerequisite: Fourth-year Honours standing.

Day division, Second term: Hours to be arranged.

Art History 11.480*

Secular Iconography: Pagan Themes in Western Art

This course analyses and categorizes the various ways in which Greco-Roman themes were used in Medieval, Renaissance and Baroque art.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Art History 11.485*

Religious Iconography: Biblical Themes in Western Art

This course explores the textual and the visual traditions underlying selected Old and New Testament themes in Medieval, Renaissance and Baroque art.

Not offered 1980-81.

Art History 11.490*

Directed Readings and Research

This course consists of supervised readings and research projects in a specific area of Art History to be chosen in consultation with the Honours Supervisor. Participation in this course may require attendance in a course offered at a lower level.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions, First term.

Members of the Department

Art History 11.491*

Directed Readings and Research

This course consists of supervised readings and research projects in a specific area of Art History to be chosen in consultation with the Honours Supervisor. Participation in this course may require attendance in a course offered at a lower level.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions, Second term.

Members of the Department

Art History 11.499

Honours Research Essay

This course, designed for independent research under the supervision of a member of the Department, is open to those students with B+ standing in their Art History courses. An essay of approximately 10,000 words is the usual assignment. A written project outline, approved by the supervisor, must be submitted to the Honours Supervisor by the last day for course changes.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day and Evening divisions.

Members of the Department.

Biology

Associate Chairman (Undergraduate Studies)
D.R. Gardner

General Information

In addition to offering Honours and Major B.Sc. programs for students in experimental science, the Biology Department (Faculty of Science) offers Honours and Major B.A. degrees either in Biology alone or combined with other programs in the Faculties of Arts and Social Sciences. The B.A. in Biology places less emphasis on support from the physical sciences, but allows students to relate their special knowledge of Biology to other disciplines in the social sciences or humanities in a three-year program. The four-year Honours program allows the development of particular interests in depth and initiates the student into research in the field, laboratory or library. Generally the Honours degree is a prerequisite for admission to graduate programs and is an advantage for those planning a professional career in teaching or administration in biology, including the health sciences, agriculture and environmental science.

The Combined Honours and Majors programs allow the simultaneous specialization in Biology and one of the Humanities or Social Sciences. Because of the social and cultural impact of science and technology, interdisciplinary combinations such as Biology and Economics, Geography, History, Journalism, Law, Mathematics, Philosophy, Political Science, Psychology, Religion or Sociology-Anthropology should better qualify one to grapple with futurology and demography, biogeography and the environment, legal implications of pollution or biomedical engineering, science policy, comparative psychology, social evolution, or the historical, philosophical and spiritual implications of the biological revolution.

It is desirable to enter an Honours program as soon after First year as possible to ensure that the sequence of selected courses will conform to degree requirements (p. 91). Students pursuing the programs must arrange their courses in consultation with the Chairman or Associate Chairman of the Department or Departments according to one of the patterns outlined below.

Bachelor of Arts Major Program in Biology

Fifteen full-course credits to include:

1. Six Biology credits to include 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.361*, 61.391*;
2. Chemistry 65.100;
3. One additional Science credit not in Biology;
4. At least three credits from one Department and one credit from any Department in either the Faculty of Arts or Social Sciences;

5. Three free options, one of which must be at the 200-level or above.

Bachelor of Arts Combined Major Program in Biology

Fifteen full-course credits to include:

1. Five Biology credits: 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.361*, 61.391*;
2. Chemistry 65.100;
3. One additional Science credit not in Biology;
4. The requirement for a Combined Major in either the Faculty of Arts or Social Sciences;
5. Three or four free options.

†See *Notes on Programs*, p. 367.

For complete information on programs and courses offered by the Department of Biology see pp. 365-372.

Bachelor of Arts Honours Program in Biology

Twenty full-course credits to include:

1. Seven Biology credits including 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.361*, 61.391*, 61.497, or 61.498, and one other 400-level credit;
2. Chemistry 65.100;
3. Two additional Science credits not in Biology, including one above the 100 level;
4. Six credits offered by either the Faculty of Arts or the Faculty of Social Sciences to include at least three offered by one Department and at least two at the 200 level or above;
5. Two 300 or 400-level credits approved by a Biology faculty member working in the student's area of specialization;
6. Two free options.

†See *Notes on Programs*, p. 367.

Bachelor of Arts Combined Honours Program in Biology

Twenty full-course credits to include:

1. Six Biology credits including 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.361*, 61.391* and one at the 400 level;
2. Chemistry 65.100;
3. Two additional Science credits not in Biology, including one above the 100 level;
4. Seven to nine credits selected from those offered by the Faculties of Arts and Social Sciences, to include the requirement for a Combined Honours in another Department, usually at least six credits;
5. An Honours project (Biology 61.497, 61.498, or equivalent from the student's other Honours department);
6. One to three free options (depending upon the requirements for 4 above).

†See *Notes on Programs* p. 367.

Program Committee

Chairman and Program Co-ordinator
P. Smart (*French*)

Members

B. Egyed (*Philosophy*)
S. Langdon (*Economics*)
L. MacDonald (*English*)
D. Muise (*History*)
D. Olsen (*Sociology*)
M. Ray (*Geography*)
D. Smith (*French*)
R. Whitaker (*Political Science*)
S. Wise (*Director, Institute of Canadian Studies, ex officio*)

General Information

The undergraduate program in Canadian Studies is a three-year program leading to a B.A. degree with a Major in Canadian Studies. Its aim is to provide students with a broad, multidisciplinary view of Canada while at the same time allowing them to concentrate on a particular aspect of Canadian society or on a discipline that has considerable Canadian content.

The program forms the undergraduate division of the Institute of Canadian Studies, and, like the graduate division of the Institute, benefits from Carleton University's situation in Canada's capital and the richness of material available in Ottawa for such studies.

The program core is designed to accomplish two things. The first is to give the student a broad understanding of Canadian history, culture and society, and the opportunity to study the relationships among various aspects of Canada in some depth. The second is to give the student some competence in French and to encourage further study of the language.

In order to allow the student the opportunity of training in a particular discipline as well as a multidisciplinary knowledge of Canada, a Combined Major is possible with other Arts and Social Science disciplines. Students thus have the option of going on to Fourth-year Honours in their other discipline, and to graduate work in that discipline or in the Institute of Canadian Studies.

Major Programs

1. Major in Canadian Studies

The Major program is composed of a core of seven credits plus three credits in program options. A program option is a course with substantial Canadian content and accepted as such by the program committee. The following is the normal course pattern.

Canadian Studies 12.188 Contemporary English-Canadian and French-Canadian Literature;
French 20.108 Advanced French for Non-Majors or French 20.111 Advanced French;
History 24.230 Canada from 1763;
Philosophy 32.202 Ideas of Man and Society in Canada.

One Social Science credit from the following list:
Economics 43.325 The Economic Development of Canada;
Geography 45.305* Canada, a Geographic System and Geography 45.306* Canada, a Regional Mosaic;
Political Science 47.200 Canadian Government and Politics (no prerequisite for Canadian Studies students);
Sociology-Anthropology 56.220 Canadian Society.

One Arts credit from the following list:
Art History 11.200* Canadian and American Art to 1900 and Art History 11.201* Canadian and American Art: The Twentieth Century;
English 18.282 Canadian Literature;
French 20.267* La littérature du XIXe siècle au Canada français and French 20.268* La littérature du XXe siècle au Canada français.

Canadian Studies 12.302 Canadian Studies Seminar.
Three program options.

At least two credits must be beyond the 200 level. At least two credits in program options must be beyond the 100 level.

Program options must be approved by the co-ordinator. A grade-point average of at least 4.0 must be achieved in the seven required credits of the program core.

2. Combined Major

For students doing a Combined Major program, the number of courses in Canadian Studies is reduced from seven to six. No program options are required.

Students who wish to use one of the courses required by Canadian Studies to fulfill a requirement of their second Major may negotiate a substitute course with the Canadian Studies Co-ordinator.

Students whose other Major is in Faculty of Arts must take one Social Science course within the Canadian Studies core.

A Combined Major in Canadian Studies consists of the following six credits:

History 24.230 Canada from 1763;
Philosophy 32.202 Ideas of Man and Society in Canada;
French 20.108 Advanced French for Non-Majors or French 20.111 Advanced French;
Canadian Studies 12.188 Contemporary English-Canadian and French-Canadian Literature;
Canadian Studies 12.302 Canadian Studies Seminar.

One credit from the following list:
Art History 11.200* Canadian and American Art to 1900 and Art History 11.201* Canadian and American Art: The Twentieth Century;
Economics 43.325 The Economic Development of Canada;

English 18.282 Canadian Literature;
 French 20.267* La littérature du XIXe siècle au Canada
 français and French 20.268* La littérature du XXe
 siècle au Canada français;
 Geography 45.305* Canada; a Geographic System
 and Geography 45.306* Canada; a Regional Mosaic;
 Political Science 47.200 Canadian Government and
 Politics;
 Sociology-Anthropology 56.220 Canadian Society.

Courses Offered

Canadian Studies 12.188

Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the English and French departments, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. Students are encouraged to use the French language for self-expression but need not do so. (Also listed as English 18.188 and French 20.188.)

Prerequisite: A basic reading knowledge of French.

Day division: Three hours a week.

E. Padolsky, P. Smart

Canadian Studies 12.302

Canadian Studies Seminar

This course is designed to allow the student to bring together the knowledge acquired in the various disciplines of the program. Each year a different topic or topics are explored in a multidisciplinary perspective. In 1980-81 the course will be devoted to The Regions of Canada. Open to students with Third-year standing in Canadian Studies.

Other Third-year students may be admitted with the permission of the Program Co-ordinator.

Day division: Seminar three hours a week.

P. Smart, J. Taylor

Courses with Substantial Canadian Content Offered within the Arts and Social Sciences Faculties

Art History

- 11.200* Canadian and American Art to 1900
- 11.201* Canadian and American Art: The Twentieth Century
- 11.300* Canadian Painting
- 11.301* Contemporary Canadian Art.
- 11.302* Canadian Architecture
- 11.303* Prehistoric Art of the Canadian Arctic
- 11.400* Canadian Artists and Architects
- 11.403* Contemporary Inuit Art in the Context of Art History

English

- 18.188 (Canadian Studies 12.188) Contemporary English-Canadian and French-Canadian Literature)
- 18.282 Canadian Literature
- 18.381 Studies in Canadian Poetry
- 18.383 Studies in Canadian Fiction
- 18.387 Selected Topic in Canadian Literature
- 18.483 Seminar in Canadian Fiction
- 18.487 Special Topic in Canadian Literature
- 18.488 Studies of the Literature of the Commonwealth

Film Studies

- 19.328 Canadian Cinema

French

- 20.151 French-Canadian Literature
- 20.163 Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present
- 20.188 (Canadian Studies 12.188) Contemporary English-Canadian and French-Canadian Literature
- 20.267* La littérature du XIXe siècle au Canada français
- 20.268* La littérature du XXe siècle au Canada français
- 20.332 Français canadien
- 20.364 Le Théâtre

Geography

- 45.305* Canada; A Geographic System
- 45.306* Canada; A Regional Mosaic
- 45.320* The Canadian City
- 45.333* Land Use, Regional Development and Planning in Canada
- 45.334* Renewable Resource Planning in a Local Area
- 45.335 The Development of Canada from the Earliest Times to the Twentieth Century
- 45.351* Northlands

History

- 24.230 Canada from 1763
- 24.231 Historical Introduction to Modern Canada
- 24.325 The Economic Development of Canada
- 24.326* Canada Before and After the Conquest
- 24.328* Eastern Ontario Communities
- 24.329* Canadian Urban History
- 24.330* Social History of Canada
- 24.331* French Canada since Confederation
- 24.332* The Maritime Provinces 1750-1900
- 24.333* Upper Canada and Ontario
- 24.335* Canadian Farm and Labour Movements since Confederation
- 24.336* Canadian External Relations
- 24.338* Canadian Immigration and Settlement
- 24.339* History of Western Canada
- 24.350 British and Canadian Constitutional History
- 24.432 Seminar on Acadian History, 1604-1967
- 24.433 Selected Periods in the History of Twentieth-Century Canada

- 24.435 Confederation
- 24.436 Ontario to 1900
- 24.438 Selected Problems in Canadian Labour History, 1873-1956

Law

- 51.100 Introduction to Legal Studies
- 51.200 The Legal Process
- 51.205 Introduction to Public Law
- 51.220 Commercial Law I
- 51.234 Law and Antisocial Behaviour
- 51.284 Law of the Family
- 51.301* Women and the Legal Process
- 51.351* Communications Law I
- 51.352* Communications Law II
- 51.353 Civil Liberties and Human Rights
- 51.354* Law and Native Peoples of Canada
- 51.380 Law of Environmental Quality
- 51.387* Quebec Civil Law
- 51.441 Labour Law
- 51.445* Labour Relations in the Public Service
- 51.450 Canadian Constitutional Law
- 51.456* Administrative Law I
- 51.457* Administrative Law II
- 51.491* Tutorial in Law
- 51.492* Tutorial in Law

Music

- 30.310* Music in Canada, 1600-1900
- 30.311* Canadian Music in the Twentieth Century

Political Science

- 47.200 Canadian Government and Politics
- 47.300 Provincial Government and Politics
- 47.301* Canadian Intergovernmental Relations
- 47.302* Canadian Municipal Government
- 47.303* Canadian Urban Politics
- 47.304* Political Parties and Elections in Canada
- 47.335* Canadian Political Ideas
- 47.336* Canadian Political Culture and Ideologies
- 47.340 Canadian Public Administration
- 47.345* Contemporary Public Policy Analysis
- 47.366* Canadian Foreign Policy
- 47.400 Topics in Canadian Government and Politics
- 47.401 Policy Making in Canada
- 47.402* Policy Seminar: Problems of Northern Development
- 47.403* Politics and the Media
- 47.404* Interest Groups in Canadian Politics
- 47.405 Federalism
- 47.406* Legislative Process in Canada
- 47.409* French Canadian Politics

Religion

- 34.290* Religion in Canada

Sociology-Anthropology

- 56.220 Canadian Society
- 54.318* The Prehistory of New World Indians and Eskimos

- 54.319* The Ethnography of New World Indians and Eskimos
- 56.320 French Canada and Quebec Society

School of Journalism offers the following courses with substantial Canadian content:

- 27.211 The Mass Media in Modern Society
- 28.306* Comparative Media Studies
- 28.351* Communications Law I
- 28.352* Communications Law II
- 27.411 Selected Problems in Mass-Communication Analysis

Department of Classics

Officers of Instruction

Chairman

D.G. Beer

Professor

A. Trevor Hodge

Associate Professors

R.C. Blockley

A.S. Fotiou

T.R. Robinson

M.E. Welsh

Assistant Professors

D.G. Beer

R.L. Jeffreys

General Information

The discipline of Classics is divided into three main fields: Latin, Greek, and Classical Civilization. By "Latin" and "Greek" are meant works of Latin and ancient Greek literature studied in the original tongue, not in translation; "Classical Civilization" covers all non-linguistic studies in classical antiquity, such as ancient history and literature in translation.

Honours and Majors programs exist in Latin alone and Greek alone, and in Classical Civilization alone. Combined Honours and Combined Major programs are available in a combination of any two of the three fields, i.e., Latin and Greek, Latin and Classical Civilization, Greek and Classical Civilization.

Combined Honours and Combined Majors programs can also be arranged combining any of the three with work in another Department (for example, Religion and Classical Civilization; Latin and French) upon consultation with the department chairmen concerned.

Major Programs

Major in Greek

Five Greek courses and Classical Civilization 13.290.

Major in Latin

Five Latin courses and Classical Civilization 13.291.

Major in Classical Civilization

Six full Classical Civilization courses and Latin or Greek at the 115 level or equivalent.

Students must include in the program one from Classical Civilization 13.290, 13.291, one from Classical Civilization 13.301, 13.302, 13.303, 13.429, two from Classical Civilization 13.209, 13.300, 13.312, 13.313, 13.315, 13.428.

Combined Majors

Greek and Classical Civilization

Four Greek courses and four Classical Civilization courses to include 13.290.

Latin and Classical Civilization

Four Latin courses and four Classical Civilization courses to include 13.291.

Greek and Latin

Four Greek courses and four Latin courses and either Classical Civilization 13.102* and 13.103* (or 13.100) or 13.290 and 13.291.

Combined Majors with Another Department

Combined Majors can be arranged with other departments. In addition to the requirements of the other Department (for which the student should consult its chairman), one of the following will be required:

Greek:

Four Greek courses and Classical Civilization 13.290.

Latin:

Four Latin courses and Classical Civilization 13.291.

Classical Civilization:

Four Classical Civilization courses. Students must include in the program two courses, one being Classical Civilization 13.102* and 13.103* (or 13.100) or 13.290 or 13.291; the other being from Classical Civilization 13.209, 13.300, 13.312, 13.313, 13.315.

Classical Civilization (Ancient History) and History:

Four Classical Civilization (Ancient History) courses: 13.290, 13.291 and two of 13.301, 13.302, 13.303.

Or, instead, three of the above Classical Civilization (Ancient History) courses and one of the following: Classical Civilization 13.100 (for which 13.102* and 13.103* may be substituted), 13.231, 13.235, 13.320, 13.342.

Students should consult the History Department for the History component of the program.

All courses are to be chosen in consultation with the Department.

Honours Programs

Honours in Greek

Seven Greek courses and Classical Civilization 13.290.

Honours in Latin

Seven Latin courses and Classical Civilization 13.291.

Honours in Classical Civilization

Nine full Classical Civilization courses and Greek 15.151 or Latin 16.151 and the other language at the 115 level.

Classical Civilization courses to be chosen as follows: 13.100 or 13.102* and 13.103*; two of the following

courses at the 200 level: 13.209, 13.290, 13.291; two full courses at the 300 level; either 13.428 or 13.429; three options.

Combined Honours

Greek and Classical Civilization

Seven Greek courses, four Classical Civilization courses to include 13.290 and Latin 16.115 or 16.151.

Latin and Classical Civilization

Seven Latin courses, four Classical Civilization courses to include 13.291 and Greek 15.115 or 15.151.

Greek and Latin

A minimum of twelve courses out of twenty is required. These may be built up in various combinations to produce differing degrees of emphasis on the two languages. Acceptable combinations are:

Six Greek courses and six Latin courses;
Seven Greek courses and five Latin courses;
Five Greek courses and seven Latin courses;
Five Greek courses, five Latin courses and two Classical Civilization courses.

Combined Honours with Another Department

Combined Honours can be arranged with other Departments. In addition to the requirements of the other Department (for which the student should consult its chairman), one of the following will normally be required:

Greek:

Six Greek courses and Classical Civilization 13.290.

Latin:

Six Latin courses and Classical Civilization 13.291.

Classical Civilization

Six Classical Civilization courses including either Classical Civilization 13.428 or 13.429.

Classical Civilization (Ancient History) and History:

Six Classical Civilization (Ancient History) courses: 13.290, 13.291, 13.301, 13.302, 13.303, 13.429.

Or, instead, five of the above Classical Civilization (Ancient History) courses, one of which must be 13.429, and one of the following: 13.100 (for which 13.102* and 13.103* may be substituted), 13.231, 13.235, 13.320, 13.342.

Students should consult the History Department for the History component of the program.

Note:

In all of the above prescriptions, Major and Honours, unless stated otherwise, the terms "Greek courses" and "Latin courses" should be understood to refer to courses at the 151 level and higher. Students with no previous knowledge of the language will need to take in addition Greek 15.115 or Latin 16.115 as a prerequisite for admission to the 151 level and this course will normally count toward their degree as one of their options. Greek 15.116 may not be taken to complete the Department's requirements for any degree. It may be taken only as an option.

Chemistry of Art and Artifacts

The attention of students interested in archaeology is directed to Chemistry 65.107, The Chemistry of Art and Artifacts. The course, designed for archaeologists and historians dealing with the deterioration and preservation of artifacts and works of art, is strongly recommended by the Department as an option.

Graduate Program

The Department of Classics offers studies leading to the degree of Master of Arts. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

■ Greek

Greek 15.115

Beginning Classical Greek

A beginning course to introduce students not only to grammar and syntax, but also to the reading of continuous prose.

Day division: Lectures and practice periods four hours a week.

D.G. Beer

Greek 15.116

Beginning Modern Greek

Not offered 1980-81.

Greek 15.151

First Year Greek: Reading and Prose Composition

A study of the *Alcestis* of Euripides and the *Orations* of Lysias. Some time is also devoted to prose composition.

Prerequisite: Greek 15.115 or equivalent.

Day division: Lectures three hours a week.

D.G. Beer

Greek 15.200

Second Year Greek: Literature and Sight Translation

A study of selected passages from major authors such as Homer and Thucydides, and the *Memorabilia* of Xenophon. Time is also devoted to sight translation.

Prerequisite: Greek 15.151 or equivalent.

Day division: Lectures three hours a week.

A.S. Fotiou

Greek 15.320

Homer

Readings in the *Iliad* and the *Odyssey* and a general study of epic poetry.

Prerequisite: Greek 15.200 or permission of the Department.

Day division: Three tutorial hours a week.

T.R. Robinson

Greek 15.330

The Philosophers

A study of the rise and development of Greek philosophy with special attention to the literary qualities of the chief authors.

Prerequisite: Greek 15.200 or permission of the Department.

Day division: Three tutorial hours a week.

A.S. Fotiou

Other courses to be offered in rotation in coming years are:

Greek 15.300

The Orators

Greek 15.310

The Tragedians

Greek 15.390

An Author in Depth

Greek 15.400

Comedy

Greek 15.410

Lyric and Elegy

Greek 15.420

The Historians

■ **Latin**

Latin 16.115

Beginning Latin

A course for students with no previous knowledge of Latin and designed to introduce them not only to the grammar and syntax of the language but also to the reading of continuous prose.

Day division: Lectures and practice periods four hours a week.

R.C. Blockley, T.R. Robinson

Latin 16.151

First Year Latin: Reading and Prose Composition

Selected readings from authors particularly valuable for the light they throw on Roman society, especially in the Silver Age. Time is also devoted to prose composition.

Prerequisite: Grade 12 Latin, Latin 16.115, or equivalent.

Day division: Lectures three hours a week.

R.L. Jeffreys

Latin 16.200

Second Year Latin: The Golden Age

A study of Cicero, Virgil, Livy, and Horace — the major writers of the Golden Age of Latin literature. Time is also devoted to practice in sight translation.

Prerequisite: Latin 16.151 or equivalent.

Day division: Lectures three hours a week.

T.R. Robinson

Latin 16.310

Lyric and Elegy

Readings in Horace and the other chief authors of the genre.

Prerequisite: Latin 16.200 or permission of the Department.

Day division: Three tutorial hours a week.

M.E. Welsh

Latin 16.400

The Historians

Readings in various authors and a study of historical form and method in the ancient world.

Prerequisite: Latin 16.200 or permission of the Department.

Day division: Three tutorial hours a week.

R.C. Blockley

Other Latin courses to be offered in rotation in coming years are:

Latin 16.300

Virgil and Epic

Latin 16.320

Philosophy

Latin 16.330

Drama

Latin 16.391

An Author in Depth

Latin 16.410

Satire

Latin 16.420

Roman Oratory

■ **Classical Civilization**

Classical Civilization 13.100

Some Aspects of Greek and Roman Civilization

Not offered 1980-81.

Classical Civilization 13.102*

Aspects of Greek Civilization

An introduction to Greek antiquity in which the main characteristics of Classical Greece are discussed. It is especially recommended for students of other faculties who desire an Arts option, or for Arts students whose interest is general rather than specific. There are appropriate readings from Greek authors in translation. Day and Evening divisions, First term: Lectures two hours a week.

D.G. Beer, A.S. Fotiou, R.L. Jeffreys, T.R. Robinson

Classical Civilization 13.103*

Aspects of Roman Civilization

An introduction to Ancient Rome in which the main characteristics of Roman civilization are discussed. It

is especially recommended for students of other faculties who desire an Arts option, or for Arts students whose interest is general rather than specific. There are appropriate readings from Latin authors in translation.

Day and Evening divisions, Second term: Lectures two hours a week.

R.C. Blockley, A.S. Fotiou, R.L. Jeffreys, T.R. Robinson

Classical Civilization 13.202

History of Comedy and Satire

Not offered 1980-81.

Classical Civilization 13.209

Greek and Roman Literary Genres

A study through English translation of the various genres of Greek and Latin literature, especially those which influenced later European writings: epic, drama, the ode, pastoral poetry, satire. (Also listed as English 18.209.)

Day division: Lectures two hours a week.

M.E. Welsh

Classical Civilization 13.231

Methods and Techniques of Archaeology

The interrelation of archaeology and anthropology, history, classics, art history, etc. Techniques of field archaeology such as stratigraphy, air photography, surveying, Carbon 14, typology and seriation, underwater archaeology, laboratory analysis: and the organization and administration of a major excavation.

Evening division: Lectures two hours a week.

Classical Civilization 13.232*

Greek and Roman Art and Archaeology

The art, architecture and archaeology of Greece and Rome. Vase painting, sculpture, Greek and Roman architecture, town planning and analogous arts are studied. (Also listed as Art History 11.210*.)

Day division, First term: Lectures two hours a week.

D. le Berrurier

Classical Civilization 13.235

Ancient Science and Technology

The development of science and technology in the ancient world and their practical application in such fields as ancient engineering, machinery, metallurgy, transport, building, agriculture and Hippocratic medicine: the position of the craftsman and artisan in society, the attitude of the intellectuals to science and manual labour, and the effect upon technological development of the institution of slavery. This course is suitable for students with no previous knowledge of Greece or Rome.

Evening division: Lectures two hours a week.

Classical Civilization 13.240

Greek Philosophy

Offered in the Department of Philosophy as Philosophy 32.205.

Classical Civilization 13.245

History of the Ancient Near East

Not offered 1980-81.

Classical Civilization (Ancient History) 13.290

History of Ancient Greece: the Classical Period

The history of Classical Greece from the Persian Wars to the conquest of Asia by Alexander the Great. Particular attention will be paid to the age of Pericles. (Also listed as History 24.290.) It is particularly intended for Majors and Honours students in Classics and History or for other students who wish to study in depth and detail the core period of Classical Greece.

Day division: Lectures two hours a week.

T.R. Robinson

Classical Civilization (Ancient History) 13.291

History of Ancient Rome: Late Republic-Early Empire 133 B.C.-96 A.D.

A study of the events, processes and conditions which led to the fall of the Republic, the establishment of the Principate of Augustus and the development of imperial policies under the Julio-Claudians and Flavians to the death of Domitian. (Also listed as History 24.291.) It is particularly intended for Majors and Honours students in Classics and History or for other students who wish to study in depth and detail the core period of Classical Rome.

Evening division: Lectures two hours a week.

R.L. Jeffreys

Classical Civilization 13.300

Classical Mythology

A study of classical mythology, emphasizing its use in Greek and Roman literature and its place in classical art and religion. There is some discussion of classical myths in terms of contemporary interpretations of myth. (All texts used will be in English.)

Day division: Lectures two hours a week.

M.E. Welsh

Classical Civilization (Ancient History) 13.301

The Hellenistic Age 323-31 B.C.

Not offered 1980-81.

Classical Civilization (Ancient History) 13.302

Late Roman History: Fourth and Fifth Centuries A.D.

Not offered 1980-81.

Classical Civilization (Ancient History) 13.303

History of the Byzantine Empire 527-1453 A.D.

The history of the Byzantine Empire from Justinian the Great in the sixth century A.D. to the fall of Constantinople in 1453 A.D. Special attention is given to the cultural, intellectual and institutional developments of Byzantium and their impact on the Slavic, Western European and Islamic countries.

Day division: Lectures two hours a week.

A.S. Fotiou

Classical Civilization 13.305

Sites and Civilization

(Summer only) Not offered 1980.

Classical Civilization 13.310

Greek Literature in Translation

Not offered 1980-81.

Classical Civilization 13.311

Latin Literature in Translation

Not offered 1980-81.

Classical Civilization 13.312

Greek and Roman Drama

Not offered 1980-81.

Classical Civilization 13.313

Lyric, Elegy and Pastoral

A study of the use of the lyrical, elegiac and pastoral forms by Greek and Roman writers to express personal feelings. Writers to be studied (in translation) include Pindar, Sappho, Alcaeus, Theocritus, Catullus, Vergil, Horace, Propertius, Tibullus and Ovid.

Day division: Lectures and discussions two hours a week.

M.E. Welsh

Classical Civilization 13.315

Epic and Novel in Ancient Greece and Rome

Not offered 1980-81.

Classical Civilization 13.320

Ancient Society

Not offered 1980-81.

Classical Civilization 13.331*

Pre-Classical Greek Art and Archaeology

Not offered 1980-81.

Classical Civilization 13.333

Monuments of Rome

A study on the site in Italy of the principal antiquities of ancient Rome and the surrounding region, including Naples and Paestum. (Summers only.)

Not offered 1980.

Classical Civilization 13.334*

Etruscan and Roman Art

Offered in the Department of Art History as Art History 11.310*.

Classical Civilization 13.342

Social Problems in Antiquity

Not offered 1980-81.

Classical Civilization 13.344

Women in Antiquity

A study of women in antiquity, primarily in Greece of the Classical and Hellenistic periods and in Rome of the late Republic, early Empire and the early Christian period. The course concentrates on the role of women

(and the various conceptions of that role) in society, both within and without the family; and some consideration is given to "types" of women that appear in literature. (Also listed as History 24.304.)

Evening division: Lectures and discussions two hours a week.

Offered 1980-81 off-campus in Rockcliffe.

D.G. Beer, R.C. Blockley

Classical Civilization 13.428

Selected Topics in Greek and Roman Literature

Special topic for 1980-81: Lyric, Elegy and Pastoral. This course is intended for Honours students in Classical Civilization, who are in their Third or Fourth years.

Prerequisite: Permission of the Department.

Day division: Discussions two hours a week.

M.E. Welsh

Classical Civilization 13.429

Selected Topics in Greek and Roman History

Also listed as History 24.429 and intended for Honours students in History and in Classics who should normally be in their Third or Fourth years. Special topic for 1980-81: The Augustan Principate.

Prerequisite: Permission of the Department.

Day division: Seminar two hours a week.

R.L. Jeffreys

Members of the Committee

- Chairman*
S. Sarkany (*French and Comparative Literature*)
- Members*
C.H. Amberg, *Dean of Graduate Studies and Research, ex officio*
M. Ciavolella (*Italian*)
J.B. Dallett (*German*)
B.I. Egyed (*Philosophy*)
V.I. Grebenshikov (*Russian*)
N.E. Griffiths, *Dean of Arts, ex officio*
C. Levenson (*English*)
P. Laurette (*French*)
A. Lopez-Fernandez (*Spanish*)
F.G. Loriggio (*Italian*)
C.A. Marsden (*Spanish*)
H.-G. Ruprecht (*Comparative Literature*)
P. van Rutten (*French*)
E.Z.S. Sarkany (*French and Comparative Literature*)

General Information

The Comparative Literature Committee offers a program of graduate study leading to the degree of Master of Arts. While the Committee makes available some of its courses as options for qualified undergraduates and graduates who are registered in other disciplines and are appreciative of the broader perspectives offered by Comparative Literature, its main purpose is to provide courses for graduate students wishing to specialize in Comparative Literature.

The purpose of the Comparative Literature program is to study literature in its international context, and to relate and compare literary phenomena usually studied in isolation because of linguistic barriers and the traditional departmental division of academic disciplines. Thus, taking into account the interrelation of all humanistic studies such as the various literatures, philosophy, psychology, sociology, the visual arts and history, "comparatists" view literary creation within the total complex evolution of world literature. The historical flow of literary archetypes, the role of folklore and myth in literature, recurrent problems of literary theory and consideration of the less well known literatures of the world are some of the objects of Comparative Literature studies.

Students registered in other language departments who wish to enrol in one or more courses in the Comparative Literature program must demonstrate a reading knowledge of the languages required for each course.

Interested students are invited to contact the Chairman in room 1517, Arts Tower.

Graduate Program

For complete information on admission and course requirements please consult the Graduate Studies and Research Calendar.

Courses Offered

Comparative Literature 17.361
Studies in Literary Genres
Not offered 1980-81.

Comparative Literature 17.400
Analytical Approaches to Literature
An introduction to basic concepts governing approaches to literature, such as historical, sociological, stylistic, hermeneutic, aesthetic and psychological, with varying emphasis from year to year. Application of theories to literature is based on English texts, although essays may be written on works in other languages.
Prerequisite: Normally Fourth-year standing and permission of the Committee.
H.-G. Ruprecht and B. Egyed

Comparative Literature 17.401
Selected Topic in Comparative Literature
Not offered 1980-81.

Criminology and Corrections

Program Co-ordinator

K. Hatt

Department of Sociology and Anthropology

Room D797, Loeb Building

Telephone 231-6650

General Information

The concentration in Criminology and Corrections provides students with the opportunity for focused study relating to crime and criminal justice. It allows students to take courses in the area while completing a Major in the disciplines of Sociology, Psychology or Law. These courses enable the student to be exposed to the variety of topics and approaches one needs in order to master this broad field. When students choose to concentrate in this area, two sets of courses are required:

1. Concentration Requirements
2. Disciplinary Requirements

The first set includes those required courses which deal with Criminology and Corrections. The second set refers to those courses required to complete the particular Major chosen (i.e., Sociology or Psychology, or a Combined Major in any two of Sociology, Psychology and Law).

Concentration Requirements

Students in Criminology and Corrections must successfully complete the following compulsory courses:

1. Sociology 53.270 (Criminology)
2. Law 51.234 (Law and Anti-social Behaviour)
3. Psychology 49.342* (Criminal Behaviour)
4. Sociology 53.373* (Correctional Policy)
5. Sociology 53.386* (Field Placement) or Psychology 49.391* (Practicum)

Disciplinary Requirements

In addition to the concentration requirements, students must also complete compulsory disciplinary requirements. These are found on the attached chart.

Students in the Criminology and Corrections concentration must select a Major from one of the five combinations given below:

1. Major in Sociology
2. Major in Psychology
3. Combined Major in Sociology and Psychology
4. Combined Major in Sociology and Law
5. Combined Major in Psychology and Law

Recommended Options

There are a number of courses relevant to the area of Criminology and Corrections, which students may consider as options. Such courses are:

Sociology 53.255*, Sociology of Deviance
Psychology 49.264*, Abnormal Psychology
Psychology 49.343*, Addiction
Law 51.102*, Introduction to the Canadian Legal System
Sociology 53.256*, Police in Society.

Grade Requirements

In addition to the requirements of the disciplinary Major(s), students in Criminology and Corrections are required to maintain a minimum of C- average in the concentration courses.

Field Placement (or Practicum)

Students may complete either Sociology 53.386* or Psychology 49.393* as part of their concentration requirements. The courses are open only to Third-year students and in order to assure a placement, students must register with the co-ordinator in the spring prior to entering Third year. Students who obtain their own placement in an agency should likewise contact the co-ordinator regarding necessary arrangements for credit.

Honours with a Concentration in Criminology and Corrections

Students interested in an Honours degree in Sociology or Psychology, or a Combined Honours degree in two of Law, Psychology or Sociology, with the concentration in Criminology and Corrections must:

- (a) Fulfil the disciplinary requirements for the Honours degree;
- (b) Fulfil the concentration requirements in Criminology and Corrections; and
- (c) Complete a thesis pertaining to the legal, psychological or sociological analysis of crime or criminal justice.

For further information consult the Coordinator of the program and the Honours adviser in the relevant discipline.

Disciplinary Requirements

Requirements for a Major in Sociology

1. One chosen from 53.100, 54.100, 56.100
2. 56.200*
3. One chosen from 53.201*, 54.201*
4. One chosen from 56.305, 53.306, 54.310
5. One additional Sociology credit at the 300 level (53.373* and 53.386*)
6. Two additional Sociology credits (53.270).

Requirements for a Major in Psychology

1. 49.100
2. Five chosen from: 49.200*, 49.205*, 49.210*, 49.220*, 49.250*, 49.260*, 49.270*, 49.300*, 49.301*, 49.302*.
(Note: Only one of the last three can be counted toward this group of five.)
3. Two and a half credits in Psychology (49.342* and 49.391*)
4. Two credits outside the Faculty of Social Sciences. (These must each be from a different department.)

Requirements for Combined Major in Sociology/Law Sociology/Psychology and Psychology/Law

Sociology

1. One chosen from 53.100, 54.100, 56.100
2. Either 56.200* and 53.201* (or 54.201*) or one chosen from 56.305, 53.306, 54.310
3. One additional Sociology credit at the 300 level (53.373* and 53.386*)
4. One further Sociology course (53.270).

Psychology

1. 49.100
2. Five chosen from 49.200*, 49.205*, 49.210*, 49.220*, 49.250*, 49.260*, 49.270*, 49.300*, 49.301*, 49.302*
(Note: Only one of the last three can be counted toward this group of five.)
3. One and a half additional Psychology credits (49.342* and 49.391*)
4. Two credits outside the Faculty of Social Sciences. (These must each be in a different department.)

Law

1. 51.100
2. 51.200
3. Two further law courses (including 51.234)
4. One law credit at the 300 level.

Note:
Where concentration requirements also fulfill disciplinary requirements, the courses are listed in parentheses.

Department of Economics

Officers of Instruction

Chairman

T.K. Rymes

Assistant Chairman

G.E. Clarke

Supervisors of Graduate Studies

D. McFetridge, Ph.D. Studies

D.A. Smith, M.A. Studies

Supervisor of Honours Studies

R.L. Carson

Supervisor of Major Studies

R.F. Neill

Professors

K. Acheson

H. English

W.I. Gillespie

K.A.J. Hay

W. Hettich

N.H. Lithwick

K. Marwah

C. Maule

G. Paquet

T.K. Rymes

E.G. West

Associate Professors

M.D. Bordo

R. Brecher

R. Carson

G.E. Clarke

E.G. Davis

A. Maslove (*Joint appointment, School of Public Administration*)

D. McFetridge

J.C. McManus

C.H. McMillan

R.F. Neill

Soo Bin Park

A.R.M. Ritter (*Joint appointment, School of International Affairs*)

D. Smith

S. Wong

Assistant Professors

E.U. Choudhri

S. Ferris

C.L. Johnson

S. Langdon

Honorary Visiting Professor

R. Bodkin

Departmental Administrator

Carolyn Richer

Major Programs

Students seeking admission to the Major, Combined Major or Honours Program in Economics are normally expected to have credits in Grade 13 Mathematics or the equivalent (Mathematics 69.006* and 69.007*). For the Major or Honours program in Economics, Mathematics 69.107* and 69.127* are requirements in the First year.

Major in Economics

Students are normally permitted to Major in Economics only if they have obtained a grade of at least C- in Economics 43.100. The requirement for a Major is at least six credits in Economics: Economics 43.100, 43.200, 43.210, 43.220, one 400-level credit, and one other credit at the 200 or 300 level. The student's program for the Second and Third years must be approved by the Supervisor of Major Studies of the Department.

Combined Major

A Combined Major, including Economics, requires Economics 43.100, 43.200, 43.210, one 400-level credit in Economics and one other Economics credit chosen in consultation with the Supervisor of Major Studies.

Honours Programs

The Honours programs may be entered in First year or by transfer from the Major programs if minimum Honours standing has been obtained. The student's program for the Second and subsequent years must be planned in consultation with the Supervisor of Honours Studies of the Department.

Honours in Economics

The requirement for an Honours degree is a minimum of twenty credits with at least nine credits in Economics and one credit in Mathematics. The Honours requirements include: Mathematics 69.107* and 69.127* or equivalent; Economics 43.100; 43.200; 43.210; 43.220; 43.420*; 43.421*; 43.490; 43.499*; two and a half additional credits in Economics, of which one and a half credits must be at the 400 level.

An Honours Essay (Economics 43.498) with a minimum grade of B- may be written to earn one and a half credits at the 400 level. Students who choose to do the Honours Essay must have a detailed outline of the Essay approved by their adviser and by the Honours Supervisor before the last day for withdrawal from full courses. In the absence of such an approved outline, the Department may require the student to withdraw from the Honours Essay.

For purposes of determining an Honours student's standing at graduation, only required credits will be

considered. If a student has taken more than the minimum number of twenty credits, the lowest grades among optional credits taken over the minimum will be disregarded in computing final standing.

Normal course pattern in Honours Economics

First year: Economics 43.100, Mathematics 69.107* and 69.127*.

Second year: Economics 43.200, 43.210, 43.220.

Third year: Economics 43.420* and 43.421*; one additional Economics credit at the 300 or 400 level.

Fourth year: Economics 43.490, 43.499*, one and a half Economics credits at the 400 level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

Combined Honours

Students may apply for Combined Honours in Economics and another discipline. Students should consult the Supervisor of Honours Studies.

Students in the Combined Honours program are normally required to take one credit in Mathematics and at least seven credits in Economics, of which three credits are at the 400 level. The requirements are: Mathematics 69.107* and 69.127* or equivalent; Economics 43.100; 43.200; 43.210; 43.220; 43.420*; 43.421*; 43.490; 43.499*; an additional half credit at the 400 level. The Honours Essay (Economics 43.498) with a weight of one and a half credits, requiring a minimum grade of B- may be written in Economics.

The minimum of twenty credits and the procedure for computing final standing described above apply to the Combined Honours program.

The Combined Honours programs in four related fields are described in greater detail below.

Normal Course Pattern in Combined Honours in Economics

First year: Economics 43.100; Mathematics 69.107* and 69.127*.

Second year: Economics 43.200, 43.210, 43.220 (or recognized equivalent).

Third year: Economics 43.420* and 43.421*.

Fourth year: Economics 43.490, 43.499*, and one additional half credit in Economics at the 400 level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

Combined Honours in Economics and Political Science

Students intending to follow this program should take Mathematics 69.107*, and 69.127* and Economics 43.100 or Political Science 47.100 (or preferably both) in the First year. The choice of courses in subsequent years will be subject to the approval of the two depart-

ments. The Honours requirements include at least an additional six courses in Economics and six courses in Political Science, one of which must be Political Science 47.498 or Economics 43.498 to be taken in the student's final year. These will be arranged so that students may transfer either to full Honours in Political Science or to full Honours in Economics at the end of the Third year if they then wish to specialize more intensively. Students must also take the comprehensive examination in Economics and meet the language requirements of the Department of Political Science. Economics 43.420* and 43.421* are required.

Combined Honours in Economics and Mathematics

Students intending to take this program take seven courses in Economics and nine in Mathematics and satisfy the comprehensive examination in Economics. Each year's program should be determined in consultation with the two departments.

The Economics courses taken shall be: Economics 43.100, 43.200, 43.210, 43.420*, 43.421*, 43.490, 43.499*, one credit at either the 300 level or 400 level and a half credit at the 400 level. At least seven credits in Mathematics must be taken beyond the First year (if Mathematics 69.102 and 69.112 or their equivalent were taken in the First year), including Mathematics 70.200, 70.210, 70.260, 70.301*, 70.302*, 70.350 and two other credits at the 300 level or above, at least one of which is at the 400 level.

Combined Honours in Economics and Journalism

Students in this program are required to complete a total of twenty-one credits and may choose to graduate with either a B.A. (Honours) or B.J. (Honours).

The Economics requirements are: Mathematics 69.107*, and 69.127*, Economics 43.100, 43.200, 43.210, 43.220, 43.420*, 43.421*, 43.490, 43.499*; an approved course in Economic History and a half option in Economics at the 400 level. The Journalism requirements are: a First year language course, Journalism 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.421, 28.498.

Combined Honours in Economics and Sociology

The Economics requirements are: Mathematics 69.107* and 69.127*, Economics 43.100, 43.200, 43.210, 43.220 (or Sociology 53.370), 43.420*, 43.421*, 43.490, 43.499* and an additional half course at the 400 level.

The Sociology requirements are: Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100; Sociology-Anthropology 56.200* and either Sociology 53.201* or Anthropology 54.201*; Sociology 53.370 or Economics 43.220; Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, Sociology 53.306 is recommended); three other credits as follows: (a) if the Honours Essay is written in Sociology: 53.495 or

53.498; and two additional courses in Sociology one of which must be taken at the 400 or 500 level; or (b) three additional courses in Sociology, one of which must be taken at the 400 or 500 level.

Graduate Program

The Department of Economics offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

Note:

Not all of the courses listed below can be made available each year in the Fall and Winter terms. Students are advised to consult with the Department prior to registration to ascertain those courses offered in 1980-81.

Economics 43.100

Introduction to Economics

An introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation and international economic problems.

Day and Evening divisions: Lectures three hours a week. Discussion groups (one hour) may be arranged.

Economics 43.100M

Introduction to Economics

Economics 43.100M is a self-paced Modular section of Economics 43.100. The Resource Centre is open on Saturdays, and at other times to be designated.

Economics 43.200

Intermediate Micro-Economic Analysis

The modern analysis of production and distribution with special reference to the determination of the conditions which maximize social welfare. The major causes of departure from the social welfare optimum in a full employment economy, with particular attention to imperfections in competition.

Prerequisite: Economics 43.100 (grade of C- or better). Students should be aware that elementary techniques to the level of Mathematics 69.007* may be introduced and used in this course.

Credit will not be given for both Economics 43.200 and 43.201*.

Day and Evening divisions: Lectures three hours a week.

Economics 43.201*

Introduction to Micro-Economic Theory and Analysis

The main topics in micro-economic theory with illustrations of their applications. Not open to students majoring in Economics or Commerce.

Prerequisite: Economics 43.100 or permission of the Department.

Credit will not be given for both Economics 43.200 and 43.201*.

Day and Evening divisions, First term: Lectures and discussions three hours a week.

Economics 43.210

Aggregate Economic Theory and Policy

An examination of modern macro-economic theory, with special reference to domestic and international monetary theory. A survey of Canadian and international financial institutions and arrangements. A critical examination of macro-economic problems and the policies advocated for their solution.

Prerequisite: Economics 43.100 (grade of C- or better). Students should be aware that elementary techniques to the level of Mathematics 69.007* may be introduced and used in this course.

Credit will not be given for both Economics 43.210 and 43.211*.

Day and Evening divisions: Lectures three hours a week.

Economics 43.211*

Introduction to Macro-Economic Theory and Analysis

The main topics in macro-economic theory with illustrations of their application. Not open to students majoring in Economics or Commerce.

Prerequisite: Economics 43.100 or permission of the Department.

Credit will not be given for both Economics 43.210 and 43.211*.

Day and Evening divisions, Second term: Lectures and discussions three hours a week.

Economics 43.220

Statistical Methods in the Social Sciences

An introduction to statistical inference.

Prerequisites: Mathematics 69.107* and 69.127* or equivalent and one of Economics 43.100 (grade of C- or better), Political Science 47.100 or Sociology 53.100, or permission of the Department.

Day and Evening divisions: Lectures three hours a week, laboratory two hours a week.

Economics 43.236

Development of the Welfare State

An examination of social security legislation and of the social and demographic conditions which gave rise to legislation. The industrial conditions of the nineteenth century and the depressed conditions of the 1930's are especially noted. The Beveridge report in England and the Marsh report in Canada are seen as major influences leading to existing social security

arrangements in Canada in the 1970's. The strengths and weaknesses of existing programs, and some of their macro- and micro-economic effects are examined. Prerequisite: Economics 43.100 or Sociology 53.100. Students are advised to take this course as a preliminary to Economics 43.330.

Economics 43.250*

Introduction to Business Finance

A study of business firms' financing and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Management Studies 42.250*.)

Prerequisites: Economics 43.100 and Accounting 41.100, or 41.101* and 41.102*.

Day and Evening divisions, First and Second terms: Lectures three hours a week.

Economics 43.300

Labour Economics

An introduction to labour economics covering topics such as North American unionism and collective bargaining, comparative trade unionism, the economics of wages, public policy issues in a Canadian context. Prerequisite: Economics 43.100.

Economics 43.304

Public Finance

Public expenditures and their relations to economic activity; public revenues; principles of taxation; public borrowing and the public debt; fiscal policy; federal-provincial fiscal arrangements.

Prerequisite: Economics 43.100.

Economics 43.305*

Selected Topics in Economic History

Examination of the economic development of selected economies. The countries to be discussed are outside Europe and North America, e.g. Argentina, Brazil, Japan, Australia, etc.

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.310

Economic History of the United States

An examination of the major aspects of the economic history of the U.S.A. from the colonial period to the twentieth century.

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.315

European Economic History

An examination of the development of economic institutions, especially those aspects of history which may be used to explain the character of the principal economic institutions and practices of the present day. (Also listed as History 24.315.)

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.321*

National Accounting

An introduction to the modern social accounting framework, encompassing the national product accounts, the input-output accounts and national transactions accounts, with emphasis on Canadian practice. Attention is paid to new developments such as national wealth accounts, constant dollar and price accounts, productivity measurement.

Prerequisite: Economics 43.100.

Economics 43.325

The Economic Development of Canada

An examination of the development of the Canadian economy with emphasis on the post-Confederation period. Attention is focused on the changing patterns of internal and external factor and commodity flows, productivity and technological change. Frequent comparisons with U.S. economic development are made. (Also listed as History 24.325.)

Prerequisite: One of Economics 43.100, History 24.230 or 24.235.

Day and Evening divisions: Lectures three hours a week.

Economics 43.330

Social Economics

An examination of some of the ways in which public authorities attempt to reshape the economic environment towards a greater conformity to social values. The objectives and practice of social security schemes, housing policy, "the war on poverty" etc. are considered.

Prerequisite: Economics 43.100.

Day division: Lectures two hours a week.

Economics 43.335

Political Economy in the Modern State

An examination of the role of government in the economy with special emphasis on alternate forms of social co-ordination and the advantages and disadvantages of each form in the Canadian system.

Prerequisite: Economics 43.100.

Evening division: Lectures two hours a week.

Economics 43.340

Problems of Area Development

The problems of depressed areas with particular reference to the Canadian scene. Measures to improve the lot of these areas and the rationale of the underlying public policy.

Prerequisite: Economics 43.100.

Evening division: Lectures and seminars two hours a week.

Economics 43.343

Special Studies in Canadian Economics

Content of this course varies year by year, topics to be determined by the instructor invited to offer the course.

Prerequisite: Economics 43.100.

Economics 43.344*

History of Canadian Economic Thought

The course summarizes and analyzes the literature produced in Canada's response to the economic conditions of a satellite state. It is an account of the economic theories and policies that have characterized the frontier in its protest against metropolitan power, from Pierre Boucher in the seventeenth century to Melville Watkins in the twentieth.

Prerequisite: An introductory course in Economics, Canadian History or Canadian Politics.

Economics 43.345

Agricultural Economics

An examination of the agricultural industry in the national economy and in low income societies. The course emphasizes the working out of the basic forces which determine supply-demand for the industry and the functional distribution of income among the factors of production. The place of institutions is examined and public policy is critically reviewed.

Prerequisite: Economics 43.100.

Evening division: Lectures and seminars three hours a week.

Economics 43.356*

Introduction to Labour Economics

An introduction to the basic principles of labour economics. Topics covered include: labour markets, the supply of labour, the demand for labour, labour mobility and migration, wage structures, the logic of trade union action, economics of trade unions, the impact of trade unions and selected macro-economic aspects of the labour market.

Prerequisite: Economics 43.100.

Evening division, Second term: Lectures three hours a week.

Economics 43.357*

Introduction to Industrial Relations

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Management Studies 42.357*.)

Prerequisite: Economics 43.100.

Day and Evening divisions, First term; Evening division, Second term: Lectures three hours a week.

Economics 43.360*

Topics in International Economics

Special topics in international trade are examined. Among possible areas to be considered are theory and policy in international trade, finance, investment and development. Intended for students planning to take only one half course in international economics at the 300 level. More comprehensive coverage of international economics may be achieved by taking both Economics 43.361* or 43.362*.

Prerequisite: Economics 43.100 or permission of the Department.

Day division, Second term; Evening division, First term: Lectures three hours a week.

Economics 43.361*

Introduction to International Trade

An extension of the basic principles of economics to international trade. Topics covered include the theory of international specialization, tariffs and other barriers to trade, trade liberalization and economic integration, international movements of labour and capital, trade and development.

Prerequisite: Economics 43.100.

Day division, First term, Evening division, Second term: Lectures three hours a week.

Economics 43.362*

International Monetary Problems

A discussion of the theory and institutions of the international monetary system, and the related balance of payments problems of nation states.

Prerequisite: Economics 43.100.

Evening division, Second term: Lectures three hours a week.

Economics 43.363*

Introduction to Economic Development

A discussion of the principles of economic development. Application to the problems of the developing countries.

Prerequisite: Economics 43.100.

Day division, First term, Evening division, Second term: Lectures three hours a week.

Economics 43.364*

Topics in Area Development

Prerequisite: Economics 43.100.

Economics 43.365*

The Economics of Planning

This course considers several aspects of the economics of planning.

Prerequisite: Economics 43.100.

Evening division, First term.

Economics 43.370

Socialist Economic Systems

The First term covers the Soviet economy. Topics include: Soviet economic development, national economic planning, Soviet foreign economic relations and recent trends in the Soviet economy. The Second term examines changes which have emerged in Eastern Europe in the traditional model of a centrally planned, socialist economy. Hungary's "New Economic Mechanism" and Yugoslavia's "Self-Managed Economy" are studied in detail.

Prerequisite: Economics 43.100.

Evening division: Lectures and discussions three hours a week.

Economics 43.380*

Topics in Canadian Economic Policy

Economic analysis applied to selected policy areas, issues or institutions. One or more of the following topics may be dealt with: decision-making by bureaucratic institutions, policy problems arising from

poverty, the economics of natural resources and pollution, urban economics.

Prerequisite: Economics 43.100.

Economics 43.385*

The Economics of Natural Resources

This course is concerned with the application of economic analysis to questions concerning natural resource use, management and conservation, as well as market failures and environmental effects. Policy problems relating to natural resources are discussed. Prerequisite: Economics 43.100.

Day division, Second term: Lectures three hours a week.

Economics 43.404*

Operations Research I

Linear programming, networks, and such techniques as PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method). (Also listed as Management Studies 42.404*.)

Prerequisites: Mathematics 69.107*, and 69.117* or 69.127* (grade of C- or better).

Evening division, First term: Lectures three hours a week.

Economics 43.405*

Operations Research II

Dynamic programming, inventory models, queuing, simulation, non-linear programming. (Also listed as Management Studies 42.405*.)

Prerequisite: Economics 43.404* or equivalent; Economics 43.220 (grade of C- or better).

Day division, Second term: Lectures three hours a week.

Economics 43.406*

Corporate Finance

An examination of some of the major theoretical issues in corporate finance, as well as an examination of certain applied financial management techniques. Topics include: introduction to portfolio theory and the capital asset pricing model, cost of capital, capital structure and dividend policy, capital budgeting under uncertainty, lease financing, mergers and consolidations. (Also listed as Management Studies 42.406*.) Prerequisites: Economics 43.200 or 43.201*, 43.220, 43.250* (grade of C- or better).

Day and Evening divisions, First and Second terms: Lectures two hours a week.

Economics 43.409

Statistical Decision Theory

An examination of Bayesian and classical approaches to decision-making under uncertainty for individuals and firms. (Also listed as Management Studies 42.409.) Prerequisites: Economics 43.220 (grade of C- or better).

Economics 43.410*

Finance and Capital Markets

The workings and structure of Canada's capital markets with particular reference to differing classes

of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Management Studies 42.410*.) Prerequisite: Economics 43.210, or 43.211* (grade of C- or better).

Day division, First term, Evening division, Second term: Lectures and seminars three hours a week.

Economics 43.411*

Investments

A survey of modern methods of investment analysis with a significant analytical flavour. Topics include: money and capital markets, security valuation, portfolio analysis, and capital market efficiency.

Prerequisite: Economics 43.406* (may be taken concurrently) (grade of C- or better).

Day division, Second term: Lectures and seminars two hours a week.

Economics 43.415

History of Economic Thought

The crucial achievements in economic theory and doctrine in the nineteenth and twentieth centuries are studied. Special emphasis is given to the interrelationship between the social environment and economic thought especially to the role of economics in the development of the national state and international institutions.

Prerequisite: One of Economics 43.200, 43.201*, 43.210 or 43.211* or permission of the Department.

Day division: Lectures and seminars three hours a week.

Economics 43.420*

Micro-Economic Theory

Theory of individual economic behaviour, theory of exchange and production, general equilibrium, alternative theories of pricing, allocation and distribution. Elementary tools of mathematics are employed in the exposition of most topics.

Prerequisites: Economics 43.200 and Mathematics 69.107* and 69.127*.

This course is required for students in the Honours program in Economics.

Day division, First term: Lectures three hours a week.

Economics 43.421*

Macro-Economic Theory

Macro-economic theory and its implications for economic policy are examined in this course. Emphasis is placed on major controversies in the field, with consideration given to topics such as: determination of national income, employment, price level and interest rates; commodity, labour and asset market behaviour; and fiscal and monetary management for economic stabilization. Elementary tools of mathematics are employed in the exposition of most topics.

Prerequisites: Economics 43.210 and Mathematics 69.107* and 69.127*.

This course is required for students in the Honours program in Economics.

Day division, Second term: Lectures three hours a week.

Economics 43.425

Advanced Economic History

A discussion of methodology applicable to the analysis of economic history. Intensive examination of selected topics in North American and West European economic history.

Prerequisite: One of Economics 43.305, 43.310, 43.315 or 43.325 or permission of the Department.

Economics 43.430

Industrial Organization and Public Policy

An analysis of the organization of Canadian industry, with reference to associated U.S. industry where necessary. A few representative industries are examined in some detail. Price theory is used to distinguish economic from institutional factors affecting the structure of the economy. Emphasis is laid upon public policies which affect, intentionally or otherwise, the organization and behaviour of industry, e.g., public utility regulation, control of restrictive practices, commercial policy and price supports.

Prerequisite: Economics 43.200 or 43.201*.

Day division: Lectures and seminars three hours a week.

Economics 43.435

Manpower Economics and Labour Policy

An examination of various theories pertaining to labour and the functioning of labour markets. Discussion of the current body of theory and its historical development. Examination of a number of selected pieces of research material (theoretical and applied) in the general area of manpower economics and labour policy.

Prerequisite: Economics 43.200 or 43.201*.

Day division: Lectures three hours a week.

Economics 43.440

Public Finance

A discussion of the theory of public finance and an examination of several empirical attempts to quantify the theory. Some topics of current interest concerning the public sector in the Canadian economy are examined in the light of the theory and empirical findings.

Prerequisite: Economics 43.200 or 43.201*.

Day division: Lectures and seminars three hours a week.

Economics 43.445*

Welfare Economics

An examination of contemporary welfare economics and its applications.

Prerequisite: Economics 43.200 or 43.201*.

Evening division, Second term: Lectures two hours a week.

Economics 43.446*

Economic Dynamics: Growth

An introduction to modern theories of the growth of income. The simple "razor's edge" growth theory of Harrod leads to an examination of the neoclassical growth theorems. Golden Rules of Accumulation; the role of money in growth and the effects on debtor-creditor position of growth in an open economy are analysed together with policies for growth and growth paradoxes.

Prerequisite: Economics 43.210 or 43.211*.

Day division, Second term: Lectures three hours a week.

Economics 43.451*

Economic Dynamics: Business Cycles

An analysis of the nature and causes of fluctuations in income, prices and employment. Short-run dynamic models arising from multiplier-accelerator and other economic processes are examined. Cycle simulation; forecasting, stability conditions; anti-cyclical policy and the problems of maximizing growth without cycles are discussed.

Prerequisites: One of Economics 43.446*, 43.210 or 43.211* and permission of the Department.

Economics 43.456

Economic Development

An enquiry into some of the economic problems of the developing countries.

Prerequisites: Economics 43.200 or 43.201*, and 43.210 or 43.211*.

Evening division: Lectures three hours a week.

Economics 43.460

International Trade

An examination of the theory of international trade and payments and its applications. The current body of theory and its historical development are discussed as are a number of attempts to verify and quantify the theory. A number of present-day problems, policies and institutions are examined in the light of the theory and empirical findings.

Prerequisites: Economics 43.200 or 43.201*, and 43.210 or 43.211*.

Day division: Lectures three hours a week.

Economics 43.465

Industrial Relations

An examination of various theories concerning industrial relations systems, human resource utilization and organizational maintenance and stress. Application of the core analytical disciplines (political science and economics) to the study of conflict resolution among management, workers and governments in the pluralistic environment of the firm. The operationality and policy significance of a number of royal commission reports and studies are examined in the light of these various theories of industrial and human relations.

Prerequisites: Economics 43.200 or 43.250*, 43.357*.

Evening division: Lectures three hours a week.

Economics 43.466

Monetary Economics

A treatment of contemporary monetary theory emphasizing the theory of the demand and supply for money and the dynamics of monetary disturbances. Prerequisites: Economics 43.200 or 43.201*, and 43.210 or 43.211*.

Day division: Lectures two hours a week.

Economics 43.470

Comparative Economic Systems

A discussion of the structure and functioning of economic systems in theory and practice. Some criteria for evaluating economic performance are proposed. Contemporary economies such as Yugoslavia, France, Japan, China and the U.S.S.R. are examined. Prerequisite: Economics 43.200 or 43.201*.

Day division: Lectures two hours a week.

Economics 43.480

Research Seminar in Urban Economics

An enquiry into the internal dynamics of cities and inter-urban relationships primarily through directed research.

Prerequisites: Economics 43.200 or 43.201*, and 43.220.

Day division: Seminars two hours a week.

Economics 43.485

Introduction to Econometrics

Introduction to problems of structural estimation of economic models, single equation estimation and related problems, simultaneous estimation for inter-dependent systems of linear form, non-linear estimation, Monte Carlo experiments to derive small sample properties of estimators. Some project in structural estimation is undertaken or assigned.

Prerequisites: Economics 43.200 or 43.201*, 43.220, and Mathematics 69.107* and 69.127* or equivalents.

Day division: Lectures two hours a week, laboratory one hour a week.

Economics 43.490

Honours Seminar

The seminar focuses on the use of basic economic theory as a tool to analyze economic problems and issues. Students meet regularly to work out assigned problems in class, to write examinations and/or to discuss assigned papers.

Open to Fourth-year Honours students with permission of the Department.

Day and Evening divisions: Seminar two hours a week.

Economics 43.492

Tutorial in Economics

An additional tutorial in Economics may be taken subsequent to or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

Day division.

Economics 43.498

Honours Essay

Students taking Honours in Economics may write an Honours essay during their final year. This essay counts for one and a half course credits. Students work under an individual faculty adviser.

Prerequisite: Permission of the Department.

Economics 43.499*

Comprehensive Examination

Prerequisite: Permission of the Department. First and Second terms.

Courses Planned for Summer School and Evening Division

The Department offers the following courses each Summer: Economics 43.100, 43.200, 43.210, 43.361*. Each year, availability of instructors permitting, at least one more half course at the 300 level and a course at the 400 level will be offered. For summer 1981 courses, see 1981 Summer Session Calendar.

The Department offers the following Evening courses each year: Economics 43.100, 43.200, 43.210, 43.220, plus a choice of optional courses that will vary from year to year depending upon projected enrolments and availability of instructors.

Department of English Language and Literature

Officers of Instruction

Chairman

M.I. Cameron

Professors Emeriti

A.M. Beattie

L.A. Cornican

P. Cruttwell

G.B. Johnston

Professors

V.K. Chari

James Downey

Michael Gnarowski

B.W. Jones

R.H. MacDonald

R.D. Mathews

R.L. McDougall

A.T. Tolley

G.J. Wood

Visiting Professors

J.I. Jackson

A.W. Trueman

Associate Professors

M.I. Cameron

Douglas Campbell

T.H. Coulson

M.J. Edwards

Barbara Garner

Faith Gildenhuys

Maureen Gunn

Charles Haines

J.J. Healy

T.J. Henighan

R.G. Laird

Barbara Lecker

R.B. Lovejoy

Lindsay Mann

A.D. McLay

T.J. Middlebro'

J.R. Morrison

J. Noonan

Kathleen O'Donnell

E. Padolsky

Ian Pringle

S.C. Russell

R.B. Rutland

M. Ryan

James Steele

Alistair Tilson

James Wilcox

Douglas Wurtele

Lorna D. Young

Assistant Professors

D.A. Beecher

Parker Duchemin

A.W. Heidemann

R.L. Hogg

Christopher Levenson

A.A. MacKinnon

Lawrence McDonald

George McKnight

T. Nollet

Michael Thompson

Writing Tutorial Service

Aviva Freedman

Major Programs

The Major in English consists of a minimum of six courses in English, as follows:

1. A First-year course in English, preferably English 18.162;
2. English 18.232;
3. Four additional courses in English which must include 18.242 or 18.352 (both may be taken if desired). English 18.268, English 18.291 and English 18.293 may not be counted towards the Major.

A combined Major in English and another subject will include at least five courses in English. English 18.232 is required, along with either 18.242 or 18.352 (or in special cases approved alternatives). Both departments must approve a combined program.

English 18.268, English 18.291 and English 18.293 may not be counted towards a combined Major.

Honours Programs

All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in English, will be admitted to, and permitted to continue in, the Honours program. Other applicants will be given individual consideration on application to the Department. Honours students must have their programs approved at registration by a departmental adviser. The Honours program consists of twenty courses after Grade 13 (twenty-five after Grade 12), of which eleven must be in English, including the following:

1. A First-year course in English, preferably English 18.162;
2. English 18.232, 18.242 and 18.352;
3. A course in English literature to 1500 or English language;
4. A course in Shakespeare;

5. A course in Canadian literature.

Of the eleven courses at least three must be chosen from courses at the 300 or 400 level designated by the Department as seminar courses or courses of independent study.

Combined Honours

Combined Honours programs may be arranged. Six courses in English are required, including:

1. A First-year course in English, preferably English 18.162;
2. English 18.232;
3. Either English 18.242 or 18.352.

Students may take both English 18.242 and 18.352. Of the six courses at least two must be chosen from courses at the 300 or 400 level designated by the Department as seminar courses or courses of independent study. English 18.268, English 18.291 and English 18.293 may not be counted towards the English requirements for Combined Honours.

Combined Honours, English and Journalism

A Combined Honours program may be arranged in English and Journalism. Candidates for the degree of Bachelor of Journalism, Combined Honours Journalism and English, take a total of twenty-one courses in four years. Candidates for the degree of Bachelor of Arts, Combined Honours English and Journalism, take a total of twenty courses in four years. The six required English courses are the same as for any other Combined Honours program in English.

Students who decide to take the special Honours project in the Fourth year in the School of Journalism, are required to take Journalism 28.498. In this case, the student would receive a Bachelor of Journalism degree, Combined Honours Journalism and English. Students who decide to do the Fourth-year project in the Department of English, take English 18.498. In this case, the student would receive a Bachelor of Arts degree, Combined Honours English and Journalism.

Academic Standing

In order to continue in the Major or Honours program, a student must attain a grade-point average of 4.0 or better in the First-year course in English. A grade-point average of at least 4.0 must be maintained thereafter in English courses.

Certificate in English Language and Composition

This is an in-service certificate intended primarily for practising teachers designed to upgrade their knowledge of those areas of language and of writing theory which underlie the new Ontario guidelines and support documents.

Admission requirement: a university degree or teaching certificate.

To receive the Certificate in English Language and Composition, students must meet the following requirements:

1. English 18.295;
2. English 18.297;
3. English 18.495;
4. Two course-credits chosen from the following: English 18.305, English 18.302, Linguistics 29.220, Linguistics 29.261*, Linguistics 29.264*, Linguistics 29.271*, a course approved by the Department.

Note:

The same course cannot be counted towards both a degree and the certificate. If any of the courses required for the certificate have already been taken for a degree, then the student must choose an approved option to replace them.

Graduate Program

The Department of English offers courses of study leading to the degree of Master of Arts. Students may choose a program consisting of course work and thesis or one consisting entirely of course work. The Department offers a Doctor of Philosophy degree program specializing in Canadian literature. For further details consult the Graduate Studies and Research Calendar and the Department's *Handbook of Advice for Graduate Students in English*.

Film Course and Writing Seminars in Poetry and Prose Fiction

The film course (English 18.268) and the writing seminars in poetry and prose fiction (English 18.291 and English 18.293) offered in the Department of English carry credit towards the total requirements for the Major and Honours degree and may be counted among the minimum eleven-course requirements of the Honours program. They cannot, however, be counted among the minimum six-course requirements of the Major program.

Reading Lists and Advice

Detailed reading lists will be available from the Department of English (1812 Arts Tower) after April 14.

Special Interest Courses

The Department offers a number of courses designed to meet the needs of students outside the English programs.

1. *Classic Works of English and Continental Literature:*

English 18.101 is designed for all students who wish to broaden their knowledge of the culture of England and continental Europe. Works of Shakespeare, Chaucer, Swift and Byron are studied, along with works (in translation) of Boccaccio, Dante, Tolstoy, Flaubert and Ibsen.

2. *Writing:*

English 18.105 offers all students instruction and practice in essay writing as well as other forms of non-fiction prose.

3. *Literature and Related Subjects:*

A number of courses explore the relationship of literature to other fields of enquiry: English 18.207 (Literature and the Sciences), English 18.208 (Myth and Literature), English 18.290 (Literature of the Self), English 18.302 (Children's Literature), and English 18.390 (the Literature of Existentialism).

4. *Areas of Special Literary Interest:*

English 18.202 (Comedy and Satire), English 18.209 (Greek and Latin Literature in Translation), English 18.303 (The English Novel), and English 18.364 (Modern Drama).

5. *Shakespeare:*

English 18.236 (Shakespeare) explores the imagination and achievement of the greatest writer in English.

6. *The Literature and Culture of English-Speaking Canada:*

English 18.282 offers a comprehensive overview of the growth and achievement of the literary tradition of English-speaking Canada.

Courses Offered

English 18.100

English Authors from Chaucer to T.S. Eliot

A study of significant works of English literature, presented as a general historical survey from the fourteenth to the twentieth centuries. In 1980-81 authors to be studied include Chaucer, Marlowe, Shakespeare, Donne, Milton, Pope, Swift, Fielding, Keats, Wordsworth, Browning, Dickens, Tennyson, Yeats, Eliot.

Day and Evening divisions: Three hours a week.

English 18.101

English and Continental Texts

A study of works by English and Continental writers. The list of authors to be read usually includes Dante, Boccaccio, Chaucer, Shakespeare, Byron, Flaubert, Tolstoy, Ibsen and O'Casey. Consult the instructor or the Department for complete reading lists. The continental texts are read in translation.

Day division: Three hours a week.

English 18.102

Form and Tradition

A study of fiction, poetry, and drama concentrating on the nature and development of significant literary forms.

Day division: Three hours a week.

English 18.105

Writing and Language

This course is designed to improve the writing of students from all disciplines through the investigation of language in its many uses and styles (e.g. scientific, journalistic, expository, commercial, literary), through study of the writing process, and through the practice of writing.

Day and Evening divisions: Three hours a week.

English 18.162

Twentieth-Century Literature

For Major and Honours students, in the First year. Undeclared students may also enrol. An introduction to literary study, examining the poetry, drama, and fiction of the twentieth century, in a representative selection of English, American and Canadian authors. The relation between critical ideas and literary works will be emphasized. The course may include works by Lawrence, Conrad, Faulkner, Eliot, Yeats and Williams, and a selection of novels, plays, and poems.

Day and Evening divisions: Three hours a week, including a one-hour seminar.

English 18.188

Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the English and French departments, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. Students are encouraged to use the French language for self-expression but need not do so. (Also listed as Canadian Studies 12.188 and French 20.188.)

Prerequisite: A basic reading knowledge of French.

Day division: Three hours a week.

English 18.202

Comedy and Satire

A critical examination of the comic and satiric in literature. The theory and practice of comedy in various forms. Types, techniques and themes of satire. The influence of Greek and Roman authors on English

writers of comedy and satire.

Prerequisite: Second-year standing.

Evening division: Three hours a week.

English 18.204

Dramatic Genres

A study of selected plays, representing the major genres of dramatic literature. The course serves as an introduction to the study of drama. Portions or the whole of some plays included on the course are rehearsed and presented by the class as part of the assigned work of the course.

Prerequisite: Second-year standing.

Day division: Lectures and workshops four hours a week.

English 18.205

History of the Language

A course on the nature and development of the sounds, grammar and spelling of the English language, together with some study of its cultural and stylistic evolution.

Prerequisite: A First-year course in English or permission of the Department.

Not offered 1980-81.

English 18.207

Literature and the Sciences

A course concentrating on certain points of intersection between literature and science, using texts from various periods and genres.

Prerequisite: Second-year standing.

Day division: Lectures three hours a week.

English 18.208

Myth and Symbol

A study of myth and its appearance in literature. The course explores the great myths which gave form to man's search for meaning, and which still strike a deep response in the psyche. A wide range of texts is used to demonstrate the nature and vitality of myth, in both its non-literary and literary forms. In 1980-81 the main themes are the creation and apocalypse (the beginning and end of the world), the garden (symbol of innocence and harmony), the life of the hero (the individuation of the self), and the myths of woman.

Prerequisite: Second-year standing.

Day division: Lectures three hours a week.

English 18.209

Greek and Latin Literary Genres

A study through English translations of the various genres of Greek and Latin literature, especially those which influenced later European writing: epic, drama, the ode, pastoral poetry, satire. Offered in the Department of Classics as Classical Civilization 13.209.

Day division: Lectures two hours a week.

English 18.212

Old English

A study of Old English language and literature, including grammar and phonology, and translation of selec-

tions of Old English prose and poetry.

Prerequisite: A First-year course in English or permission of the Department.

Not offered 1980-81.

English 18.222

Introduction to Middle English

An introductory study of Middle English language and literature.

Prerequisite: A First-year course in English or permission of the Department.

Not offered 1980-81.

English 18.232

English Studies I

The required course for Second-year Honours and Major students. A selection of major authors from Chaucer to Milton is studied intensively, and their intellectual and artistic relationships emphasized.

Prerequisite: A First-year course in English or permission of the Department.

Day and Evening divisions: Lectures and seminar four hours a week.

English 18.234

Drama in England until 1642

A study of the development of dramatic production and literature from the middle ages to the closing of the theatres in 1642. Reading of representative plays, excluding Shakespeare.

Prerequisite: A First-year course in English or permission of the Department.

Not offered 1980-81.

English 18.236

Shakespeare

A close study of a selection of Shakespeare's plays; attention is also paid to his environment and his development as a dramatist.

Prerequisite: A First-year course in English or permission of the Department.

Day and Evening divisions: Three hours a week.

English 18.242

English Studies II

A required course for Honours students in their Second year. Major students and Combined Major and Combined Honours students must take either this course or English 18.352, and may take both. The course covers the literature of the Restoration and the eighteenth century. Major authors to be studied generally include Dryden, Pope, Swift, Johnson and Blake.

Prerequisite: A First-year course in English.

Day and Evening divisions: Lectures and seminar three hours a week.

English 18.252

Victorian Poetry and Prose

The study of the major poetry and prose of the Victorian period.

Prerequisite: A First-year course in English.

Not offered 1980-81.

English 18.253

The Novel from Dickens to Conrad

A study of the English novel from the High Victorian period of Dickens, Thackeray, and Eliot to World War I.

Prerequisite: A First-year course in English or permission of the Department.

Not offered 1980-81.

English 18.263

The Novel in the Twentieth Century

A study of twentieth-century American, British and Canadian novels.

Prerequisite: A First-year course in English.

Not offered 1980-81.

English 18.268

Forms and Conventions of the Cinema

This course examines the forms, structures, and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis, and evaluation of film. (Also listed as Film Studies 19.268.)

Prerequisite: Film Studies 19.100 or a First-year course in English.

Day division: Three hours lecture and screening, one hour discussion groups.

English 18.272

Introduction to American Literature

An introduction to the major authors and traditions of American literature from the beginnings to the present.

Prerequisite: A First-year course in English or permission of the Department.

Day division: Three hours a week.

English 18.282

Canadian Literature

A survey of the development of Canadian literature in English from its nineteenth-century beginnings to the present.

Prerequisite: A First-year course in English or permission of the Department.

Day and Evening divisions: Three hours a week.

English 18.290

Literature of the Self

A study of the forms, themes and meaning of autobiographical literature. Attention is paid to the history of autobiographical writing, and to the autobiography as a social document, but the main focus of the course is on autobiography as part of the modern search for the self. In 1980-81 the main topics include the war memoir, the experience of the Canadian settler, autobiographical fiction and the confessional *apologia*.

Prerequisite: Second-year standing.

Day division: Lectures three hours a week.

English 18.291

Writing Seminar in Poetry

A workshop involving regular assignments in writing poetry and practical criticism based on this work. Enrolment in the Day division is limited. Details may

be obtained from the Department.

Prerequisite: A First-year course in English and permission of the Department.

Evening division: Two hours a week.

English 18.292

Women and Literature

An exploration of the feminine perspective in literature as well as the changing role of women in society. A theoretical survey of relevant issues provides a general framework for the course; the main focus, however, is on selected literary texts. Both women authors and the feminine role in works of literature and in the society that produced them are studied.

Evening division: Three hours a week.

English 18.293

Writing Seminar in Prose Fiction

A workshop involving regular assignments in writing prose fiction and practical criticism based on this work. Enrolment is limited. Details may be obtained from the Department.

Prerequisite: A First-year course in English and permission of the Department.

Day division: Two hours a week.

English 18.295

Introduction to the English Language

A course intended particularly as an in-service course for teachers of English and the Language Arts. The sound system of English in relation to English spelling; English vocabulary, grammar and syntax; stages in the acquisition of English as a first language, especially after age six; roles and uses of English in Canada; standard English pedagogical implications.

Prerequisite: Admission to the Certificate in English Language and Composition program or permission of the Department.

English 18.297

Writing: Theory and Practice

A study of the process of writing in theory and practice. Reading and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationship between talking and writing; strategies for encouraging growth in writing. In addition to examining recent research findings and pertinent theoretical texts, students engage in the composing process themselves in order to ground the theory and research findings in their own experiences as writers.

Prerequisite: Second-year standing or enrolment in the Certificate Program in English Language and Composition.

Evening division: Three hours a week.

English 18.300

Literary Criticism from Aristotle to the Present

Problems and questions in literary criticism.

Prerequisite: English 18.232.

Day division: Seminar two hours a week.

English 18.302

Children's Literature

An historical and critical study of children's literature. The course introduces students to critical analysis and assessment of a number of acknowledged classics of children's literature. The organization of works studied will be generic, with myth, legend, folklore, fantasy, poetry, drama, allegory, fable, and fiction being the principal forms to be considered. A detailed reading list is available from the Department. Enrolment is limited.

Prerequisite: Second-year standing.

Day and Evening divisions: Three hours a week.

English 18.303

The English Novel

The development of the art of fiction in English literature, from its beginning in the eighteenth century, through the major Victorian novelists, to the beginning of the twentieth century.

Prerequisite: A First-year course in English or permission of the Department.

Day division: Lectures three hours a week.

English 18.304

Drama to the Nineteenth Century

A survey of world dramatic literature from the classical period to the end of the Romantic period, with special emphasis on a comparison of the various periods of English drama with other traditions. Certain major dramatic genres are discussed where relevant, e.g. classical tragedy and comedy, the mystery play, the Japanese Noh drama, the Italian *commedia dell'arte*; neo-classical and romantic forms of drama of the Renaissance, the Restoration comedy of manners, sentimental drama, Romanticism etc.

Prerequisite: A First-year course in English.

Day division: Seminar two hours a week.

English 18.305

Style, Imagination and Judgment

An examination of the nature of good and bad writing. The category of imagination as a criterion for judging prose. Conditions favourable to the production of good writing. The cultural effects of bad writing.

Prerequisite: Third-year standing or enrolment in the Certificate Program in English Language and Composition.

Evening division: Three hours a week.

English 18.322

Middle English

A study of the English language and literature between the Norman Conquest and the fifteenth century. In 1980-81 the course is principally concerned with the works of Geoffrey Chaucer.

Prerequisite: English 18.232 or permission of the Department.

Day division: Seminar two hours a week.

English 18.327

Chaucer and the Allegorical Tradition

A study of the works of Chaucer and Spenser, principally *The Canterbury Tales*, and *The Faerie Queene*, together with contemporary background and current critical writings.

Prerequisite: English 18.232.

Not offered 1980-81.

English 18.334

Seminar in Medieval and Renaissance Drama

Study of a group of plays, with attention given to the development of dramatic form and theatrical techniques and to problems of staging. Included in the study is the production-history of individual plays.

Prerequisite: English 18.232.

Day division: Seminar two hours a week.

English 18.336

Milton

An intensive study of the poetry and prose of Milton, combined with an examination of the intellectual background of his work and his age.

Prerequisite: English 18.232.

Not offered 1980-81.

English 18.337

Seventeenth-Century Literature

This course is devoted to a study of five major writers of the seventeenth century: Donne, Herbert, Marvell, Milton, and Jonson. In addition, some other writers in prose, such as Bacon, Bunyan, Burton, Andrewes, and Browne, are studied in less detail. These writers represent the principal trends and aspects of the age — the Anglo-Catholic, Puritan and humanist — and the literary forms which were associated with them.

Prerequisite: English 18.232.

Day division: Seminar two hours a week.

English 18.338

Sixteenth-Century Literature

An examination of various English authors of the sixteenth century, including Wyatt, Surrey, Sidney, Spenser, Donne, Jonson, and certain other writers to be selected by the instructor.

Prerequisite: English 18.232.

Not offered 1980-81.

English 18.342

Eighteenth-Century Literature

Detailed study of authors and movements of the period 1660 to 1780.

Prerequisite: English 18.242 or permission of the Department.

Not offered 1980-81.

English 18.343

The Novel from Defoe to Scott

A study of selected novelists of the eighteenth century and earlier nineteenth century.

Prerequisite: English 18.242 or permission of the Department.

Not offered 1980-81.

English 18.344

Restoration and Eighteenth-Century Drama

A seminar in the development of drama in London from 1660 through the eighteenth century.

Prerequisite: English 18.242 or permission of the Department.

Not offered 1980-81.

English 18.348

Studies in Romanticism

A study of major writers, including Wordsworth, Coleridge, Blake, Byron, Keats and Shelley.

Prerequisite: English 18.232, 18.242 or permission of the Department.

Day division: Seminar two hours a week.

English 18.351

Studies in the Major Victorian Poets

A detailed examination of the poetry of Tennyson, Browning and Arnold, with some attention to related poems of other Victorian authors.

Prerequisite: English 18.232 or permission of the Department.

Day division: Seminar two hours a week.

English 18.352

English Studies III

A required course for Honours students. For Majors, Combined Majors and Combined Honours students, this is an alternative to English 18.242. Both courses may be taken. A selection of nineteenth-century authors is studied.

Prerequisite: English 18.232.

Day and Evening divisions: Lectures and seminar three hours a week.

English 18.358

Studies in Major Nineteenth-Century Thinkers

Readings in nineteenth-century prose, with particular emphasis on Carlyle, Mill, Newman, Arnold and Ruskin.

Prerequisite: English 18.232 or permission of the Department.

Day division: Seminar two hours a week.

English 18.361

Twentieth-Century Poetry

An introduction to the poetry of Great Britain, the United States and Canada in the twentieth century.

Prerequisite: A First-year course in English or permission of the Department.

Day division: Lectures three hours a week.

English 18.362

Twentieth-Century Authors

The poetry, drama, and fiction of the Anglo-Irish Literary Resurgence (1880-1940), with special consideration of works by Lady Gregory, Yeats, Synge, O'Casey, Shaw, and Joyce.

Prerequisite: A First-year course in English or permission of the Department.

Evening division: Seminar two hours a week.

English 18.363

Twentieth-Century British Fiction

A study of twentieth-century British fiction. The specific authors may vary from year to year. Consult the Department's reading lists.

Prerequisite: A First-year course in English or permission of the Department.

Evening division: Lectures three hours a week.

English 18.364

Modern Drama

An examination of the significant trends that have shaped the development of modern drama from Ibsen and Strindberg to such contemporary dramatists as Beckett, Albee, and Pinter. Among the movements discussed and illustrated from relevant plays are realism, symbolism, expressionism, epic theatre, surrealism, theatre of cruelty, and theatre of the absurd.

Prerequisite: A First-year course in English or permission of the Department.

Day division: Lectures three hours a week.

English 18.367

Contemporary Texts

A study of twentieth-century works of literature. In 1980-81 the course focuses on a selection of major modern dramatists and theoreticians of the theatre who have made use of masks or explored their thematic potential in a central way. The dramatists discussed include Pirandello, Yeats, the German Expressionists, Brecht, O'Neill, Jarry, Genet, etc.

Prerequisite: A First-year course in English or permission of the Department.

Day division: Seminar two hours a week.

English 18.368

Studies in the Novel After World War II

A study of American, British and Canadian novels.

Not offered 1980-81.

English 18.371

Studies in American Poetry

A study of twentieth-century American poetry to the 1970's including such authors as Crane, Williams, Pound, Stevens, Lowell, Duncan, Olson, Ginsberg, Plath, Snyder, Plath, Sexton, Oates, and Rich. Attention is given to poetic movements and influences.

Prerequisite: English 18.272 or permission of the Department.

Not offered 1980-81.

English 18.373

Studies in American Fiction

The development of American novel and short story writing from Washington Irving to the present.

Prerequisite: English 18.272 or a course in the English novel.

Day division: Seminar two hours a week.

English 18.378

Studies in American Literature

A study of the intellectual roots of American literature and culture: Puritanism, Enlightenment, Transcendentalism.

Prerequisite: English 18.272.

Not offered 1980-81.

English 18.381

Studies in Canadian Poetry

The course concerns itself with major trends and figures from the beginning until our time. It is designed to permit students to gain some familiarity with the whole tradition of English-Canadian poetry with some comparative reference to the poetry of Quebec.

Prerequisite: English 18.282 or permission of the Department.

Day division: Seminar two hours a week.

English 18.383

Studies in Canadian Fiction

A study of selected Canadian novels and the development of Canadian fiction.

Prerequisite: English 18.282 or permission of the Department.

Day division: Seminar two hours a week.

English 18.387

Selected Topic in Canadian Literature

In 1980-81 a seminar dealing with the development of the short story in Canada with specific reference to, and critical discussion of, major examples of the genre.

Prerequisite: English 18.282 or permission of the Department.

Evening division: Seminar two hours a week.

English 18.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature as the paramount expression of the writer's concern with *la condition humaine*. Such themes as alienation, dread, subjectivity, freedom, authenticity, and death are explored in selected work by major authors, including Holderlin, Leopardi, Kierkegaard, Dostoevsky, Nietzsche, Tolstoy, Rilke, Kafka, Conrad, Hesse, Ionesco, Beckett, Sartre, and Camus. Attention is also given to the philosophic basis and literary antecedents of the existentialist posture.

Prerequisite: Permission of the Department.

Day division: Lectures and discussions three hours a week.

English 18.398

Independent Study

Research under the supervision of a member of the Department for students in the Third year who have declared Major or Honours standing in English. Projects may be organized on an individual basis, or as a special seminar directed by a member of the Department. The course may be taken only once. In the case of the

individual project, an essay of approximately 8,000 words is the usual written assignment. A written request, outlining the project, with the approval of the supervisor, must be submitted to the co-ordinator by the last day for course changes. Entry into this course, when done as an individual study, is limited to students with a B+ average in their English courses.

Note: This course may be used to fulfill one of the seminar requirements for the Honours degree, but it cannot fulfill an area requirement or substitute for English 18.232, 18.242, or 18.352.

English 18.401

Studies in Poetry

A seminar on lyric poetry, in the light of twentieth-century critical theory. Students read a number of lyric poems from different periods and consider the usefulness of various critical approaches to the poems. Students are encouraged to develop their own informed critical principles for analysing, appreciating, and evaluating lyric poetry.

Prerequisite: Permission of the Department.

Not offered 1980-81.

English 18.403

Seminar in the English Novel

A seminar for the study and discussion of the art of the novel as exemplified by major works of fiction. Study includes varieties of form and pattern, modes of narration, imagery and symbolism, realism, and naturalism.

Prerequisite: Honours students; others by permission of the Department.

Evening division: Seminar two hours a week.

English 18.411

Old English Poetry

Translation and study of the text of Beowulf and the Finnsburg Fragment.

Prerequisite: Permission of the Department.

Not offered 1980-81.

English 18.418

Old Norse

An introductory study of the Old Norse language and literature.

Prerequisite: English 18.212 or an equivalent course in Old English, or permission of the Department.

Not offered 1980-81.

English 18.436

Seminar in Shakespeare

A seminar for Honours students, concentrating on critical and scholarly approaches to Shakespeare's work.

Prerequisite: Honours students; others by permission of the Department.

Day division: Seminar two hours a week.

English 18.458

Special Studies in Nineteenth-Century Literature

A study of a special topic in nineteenth century literature. For 1980-81, an intensive study of the poetry and

critical writing of the 1840's and 1850's, two of the most intriguing decades of the reign of Queen Victoria. Students have the opportunity to study not only the major authors such as Tennyson, the Brownings, and Arnold, but also writers who, though less known today, helped to shape the literature and influence events of the time. Both instructors participate in all seminars. Prerequisite: Third- or Fourth-year standing in English, or permission of the Department.
Not offered 1980-81.

English 18.464

Modern Theatre

A theoretical and practical study of the main traditions of theatre in the twentieth-century.
Prerequisites: A departmental course in drama and permission of the Department.
Not offered 1980-81.

English 18.477

Major American Authors

A detailed examination of the thought and work of a selected group of significant American writers. In 1980-81 the course concentrates on several novels by Melville, Hawthorne, Faulkner and Kerouac.
Prerequisite: English 18.272.
Not offered 1980-81.

English 18.483

Seminar in Canadian Fiction

A seminar on the works of selected Canadian novelists.
Prerequisite: English 18.282 or 18.383 and permission of the Department.
Not offered 1980-81.

English 18.487

Special Topic in Canadian Literature

An advanced course for students interested in theatre, and for Majors and Honours students in English. The general field of study in 1980-81 is an historical and thematic survey of Canadian drama.
Prerequisite: Permission of the Department.
Day division: Seminar two hours a week.

English 18.488

Studies of the Literature of the Commonwealth

Prerequisite: Permission of the Department.
Not offered 1980-81.

English 18.495

Research Seminar in English and Education

Investigation of recent developments in language study, rhetoric and composition, and studies of the literary imagination. Their implications for the teaching of English.
Prerequisite: English 18.295 and 18.297 or permission of the Department.
Not offered 1980-81.

English 18.498

Independent Study

A course for independent research and writing, under the supervision of a member of the Department, open to students in the Fourth year of Honours with a B+ standing in their English courses. An essay of approximately 10,000 words is the usual written assignment. A written request, outlining the project, with the approval of the supervisor, must be submitted to the co-ordinator by the last day for course changes.

Note: This course may be used to fulfill one of the seminar requirements for the Honours degree, but it cannot fulfill an area requirement or substitute for English 18.232, 18.242, or 18.352. For students in Combined Honours, however, it is considered to be the equivalent of an Honours essay.

English 18.499

Seminar

For Honours students in the Fourth year and others by permission. The course considers the role of English studies in a complex system of higher education.
Day division: Seminar two hours a week.

Courses Planned for Summer School and Evening Division

Selections from the following groups of courses will be offered as follows:

Core courses: 18.162, 18.232, 18.242, 18.352: offered each year in both Evening division, Winter session and Evening division, Summer session.

English literature before 1500, or English Language or English linguistics: At least one course will be offered every other year in the Evening division, Winter session; at least one course will be offered every year in the Summer session.

Shakespeare courses: At least one course will be offered each year in the Evening division, Winter session and at least one course will be offered each year in the Summer session, alternating between Day and Evening divisions.

Courses at the 300 and 400 level designated as seminar courses: At least one course will be offered in each of: Evening division, Winter session; Day division, Summer session; Evening division, Summer session.

At least one course in each of the following areas will be offered each year in both Evening division, Winter session, and Summer session;

1. *Canadian Literature;*
2. *A First-year course in English other than 18.162.*

Officers of Instruction

Chairman

Christopher G. Faulkner

Associate Professors

Patrick MacFadden

Christopher G. Faulkner

Peter Harcourt

Assistant Professors

Mark Langer

Franco Loriggio

George McKnight

Zuzana Pick

General Information

Film Studies is an academic discipline concerned with the history, criticism, theory and practice of the cinema both as an art form and as a documentary record of our time. The cinema is a source of pleasure and knowledge, and its study should form a part of one's cultural education. The program will enable the student to develop a critical faculty appropriate to intelligent understanding of the cinema by approaching its study as a scholarly activity which rewards systematic research, analysis and exposition.

In designing the curriculum the Department has sought both integration and progressive development. A careful curricular development will ensure intellectual growth through either a Major or Honours program devoted to the study of film. While the courses have been articulated together, they remain distinct enough to permit a number of related intellectual approaches to the study of film, and to enable those approaches to be related to work in other disciplines.

Major Programs

All students who elect Film Studies as a Major subject must have their program approved by a member of the Film Studies Department. The Major in Film Studies consists of a minimum of six courses in Film Studies, as follows:

1. Film Studies 19.100.
2. Two courses in Film Studies at the 300 level, one of which must be either Film Studies 19.300 or 19.368.
3. Three other courses in Film Studies.

Combined Majors

Combined Majors programs may be arranged with other departments in the Faculties of Arts or Social Sciences. Both Departments must approve a combined Majors program.

A combined Major in Film Studies and another subject includes at least five courses in Film Studies, as follows:

1. Film Studies 19.100.
2. Two courses in Film Studies at the 300 level, one of which must be either 19.300 or 19.368.
3. Two other courses in Film Studies.

Honours Program

All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in Film Studies, will be admitted to, and permitted to continue in, the Honours program. Other applicants will be given individual consideration on application to the Department. Honours students must have their program approved by a departmental adviser.

Honours in Film Studies consists of a minimum of nine courses in Film Studies as follows:

1. Film Studies 19.100.
2. Film Studies 19.300 and Film Studies 19.368.
3. Two courses in Film Studies at the 400 level.
4. Four other courses in Film Studies.

Combined Honours

Combined Honours programs may be arranged through the departmental adviser. Both Departments must approve a combined Honours program. A combined Honours in Film Studies and another subject includes at least seven courses in Film Studies, as follows:

1. Film Studies 19.100.
2. Film Studies 19.300 and Film Studies 19.368.
3. One course in Film Studies at the 400 level.
4. Three other courses in Film Studies.

All Film Studies Majors, Combined Majors and Honours students are required to learn how to operate and maintain standard 16mm viewing equipment.

The Honours and Combined Honours programs will not be fully implemented until 1981-82. No Fourth-year courses will be offered in 1980-81.

Handbook for Film Studies

A Handbook for Film Studies will be available after July 1, 1980 from the Secretariat, Film Studies Department, Room 427, St. Patrick's College Building, and from the Admissions Office, Administration Building.

Courses Offered

Film Studies 19.100

Introduction to Film Studies

An introduction to the study of film. Consideration is given to the nature of the medium, audience perception, historical and technical development of the cinema, and problems of theory and critical method. The course focuses on four specific areas: **(a)** style and technique, **(b)** a period in film history, **(c)** the film maker, and **(d)** film genres.

Day and Evening divisions: Lecture and screening three hours a week, discussion one hour a week.

Film Studies 19.215 (19.210)

The Documentary

This course examines the work of individual film makers, of documentary styles, and of organizations and institutions in the context of the history of documentary film making. Non-fiction films other than documentaries may be considered. (Also listed as Journalism 28.215.)

Prerequisite: Film Studies 19.100 or permission of the Department.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.220

National Cinema

This course examines the film production of specific countries in order to determine the themes, the styles, and the character of a national cinema. In 1980-81 the course will concentrate on Latin American and New German cinema.

Prerequisite: Film Studies 19.100, or permission of the Department.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.228

The American Cinema

A study of the American cinema as a cultural force, a social document and a corporate industry. The course examines the characteristic features of this cinema such as the major production companies, the star system, classic genres such as the Western and Thriller, as well as works of individual film makers.

Prerequisite: Film Studies 19.100.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.240

The Film Maker

A detailed study of the themes, the characteristic style, development and influence of two or three directors. In 1980-81 the course concentrates on Hitchcock, Chaplin and Pabst.

Prerequisite: Film Studies 19.100.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.268

Forms and Conventions of the Cinema

This course examines the forms, structures, and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis, and evaluation of film. (Also listed as English 18.268.)

Prerequisite: Film Studies 19.100 or a First-year course in English.

Day division: Lecture and screening three hours a week, discussion one hour a week.

Film Studies 19.300

Aspects of Film History

A study of the major histories of film. Special attention is paid to the historiographical assumptions, the critical judgments, and the cultural values that have affected past and present evaluations of the cinema.

Prerequisite: A Second-year course in Film Studies or permission of the Department.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.328

The Canadian Cinema

A critical examination of Canadian film, English and French. The course relates the Canadian cinema to other aspects of Canadian culture, and examines the conditions of production, distribution, and exhibition that have affected film making in this country.

Prerequisite: Third-year standing or permission of the Department.

Day division: Screening two hours a week, lecture two hours a week.

Film Studies 19.333

Film and Society

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Journalism 28.333.)

Prerequisite: Film Studies 19.100, or Third-year standing.

Day division: Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.368

Critical Approaches to Cinema

This course investigates the assumptions which underlie the practice of film criticism, and through an examination of the major film theories, enquires into the basic aesthetics of film. Considerable attention is given to developing the skills necessary for writing film criticism.

Prerequisite: A Second-year course in Film Studies or permission of the Department.

Day division: Screening three hours a week, seminar two hours a week.

Film Studies 19.398

Special Topic

This course offers selected topics in film studies not ordinarily available in the regular course program. The choice of topic or topics will vary at least every two years and will be announced well in advance of the registration period.

Prerequisite: Third-year standing, or permission of the Department.

Not offered 1980-81.

Film Studies 19.399

Independent Study

A research course for selected students who wish to study a topic of particular interest. An essay of 6,000 to 8,000 words is the usual assignment. The course may only be taken once and is available to students in the Third year only. Projects must be organized on an individual basis with a member of the Film Studies Department and approved by the Chairman. A written request outlining the project must be submitted by the last day for course changes.

Prerequisite: Permission and Third-year standing.

Film Studies 19.400

Modes of Historical Research

This course develops the skills necessary for individual research in the field of film history.

Prerequisite: Film Studies 19.300.

Not offered 1980-81.

Film Studies 19.468

Problems in Contemporary Film Theory

A detailed study of contemporary film theory. The French and Italian contribution to the areas of structuralism, semiology, and psychoanalysis are examined in detail, along with their influence on British, American and Canadian theories.

Prerequisite: Film Studies 19.368.

Not offered 1980-81.

Graduate Study

While Film Studies does not offer a graduate program, a graduate level course, Canadian Cinema 19.528, is taught by a member of the Department through the Institute of Canadian Studies. Further information is available in the Calendar of the Faculty of Graduate Studies and Research.

Summer and Evening Study

Film Studies 19.100 will be offered every year during Summer Evening and Winter Evening divisions. In addition, a different upper level course will be offered each year during the Winter Evening division. It may not be possible, however, to obtain a degree in Film Studies through the Summer or Evening divisions alone.

Department of French

Officers of Instruction

Chairman

D.W. Smith

Assistant Chairman

J. Miquet

Co-ordinator, Intensive Year in French

O. Condemine

Supervisor of Major Studies

E.F. Kaye

Supervisor of Honours Studies

E.N. Zimmerman

Supervisor of Graduate Studies

A. Halsall

Professors

H.P. Clive

O. Condemine

A. Elbaz

C.P. Fleischauer

E.F. Kaye

P. Laurette

S. Sarkany

J.S. Tassie

P. van Rutten

Associate Professors

F. Cousin

R. Galliani

M. Gaulin

A. Halsall

J. Miquet

P. Smart

E.N. Zimmerman

Assistant Professors

J. Kealey

S. Robinson

D.W. Smith

J.-J. van Vlasselaer

E. Voldeng

Senior Lecturer

W.M. Fraser

Instructors

B. Burke

G. Riser

D. Rosse

A. Ruprecht

General Information

As Carleton University is situated in a bilingual community, students are encouraged to take advantage of the multiple opportunities for practical appreciation of the language. Radio, television, cinema, stage, the press and everyday conversation are at hand to supplement academic course work. The French Department has a special housing service which allows students to live with francophone families. Classes are conducted in French unless otherwise indicated. The Department also has at its disposal a fully equipped language laboratory.

English-speaking students who wish to graduate with a Major or an Honours standing in French are normally required to pass an oral examination testing their proficiency in spoken French. The examination takes place at the beginning of their final year, with the option of repeating it at the end of that year.

Intensive Year in French

Students take either four or five credits in the First or the Second year of a degree program in French. Students in other disciplines, especially where proficiency in French is a requirement, are also encouraged to enrol in the Intensive year in French. Cultural activities outside the classroom will be organized.

Interested students must consult the co-ordinator of the Intensive year in French.

Admission Requirements:

Students taking the Intensive year in French in their First year should have 70% in Ontario Grade 13 French or equivalent.

Students enrolling in the program in Second year should have a C+ average in First-year French courses taken previously.

This program normally enables enrolled students to complete up to five of the required credits for a Major or Honours in French.

Student Exchanges

The Department of French has two student exchanges: one with the *Université du Québec* in Trois-Rivières and the other with the *Université de Savoie* in Chambéry in France. These exchange programs make it possible for a maximum of six Honours students (three of whom go to Québec and three to France) to spend their Third year in an immersion milieu. Financial assistance is also available. For more information please consult the Chairman of the Department.

First Year Programs: Honours and Majors

Students must acquire one credit in language and one credit in literature as follows:

Language requirement (one credit)

A student wishing to do Major or Honours work in French takes French 20.111 (for Anglophones) or 20.112 (for Francophones).

Literature requirement (one credit)

The student also takes one of the following: French 20.161, 20.162 or 20.163.

Note:

Honours students intending to choose the language-linguistics concentration would be well advised to take the required course Linguistics 29.100 during their First year.

Major Programs

1. Major in French

The following program will help students to consolidate knowledge of French grammar and to gain a comprehensive view of various aspects of French and French-Canadian literature.

The program consists of four credits beyond the common First year.

In the Second year students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) and two half-courses in literature chosen from the series French 20.261* to 20.268*.

In the Third year students normally take French 20.312 and one literature course chosen from the series French 20.361 to 20.367 or exceptionally and only with permission, 20.461 to 20.467.

Students should note that at least one of the literature credits must be obtained in a course or courses with a French content, and at least one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

2. Combined Major

Combined Major programs are available in French and other modern or classical languages, linguistics, or with another discipline in the Humanities or Social Sciences.

The program consists of three credits beyond the common First year.

In the Second year students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) and two half-courses in literature chosen from the series French 20.261* to 20.268*.

In the Third year students normally take either French 20.312 or a literature course chosen from the series French 20.361 to 20.367.

Students should note that at least one of the credits in literature must be in a course or courses with a French content, and at least one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Honours Programs

Several Honours programs are available. Course patterns are designed to assure a balanced appreciation of French and French-Canadian literature, with competence in oral and written expression in the French language. Interested candidates will note the general regulations governing Honours on pp. 91-92.

Honours in French

This program is particularly suitable for students intending to pursue graduate studies in the field of Romance languages, literatures and related fields.

Students in the Honours program must declare their concentration in the Second year. There are two areas of concentration in the French Honours program:

Concentration A:

This program consists of six credits in literature and two credits in French language and linguistics beyond the common First year. Two credits are also taken in one language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted, in whole or in part, from this requirement.

The two credits in French language and linguistics are chosen from French 20.211 (for Anglophones), 20.212 (for Francophones), French 20.231 to 20.233*, 20.312, 20.331 to 20.334*, 20.431 to 20.435, with at least one credit at the 300/400 level.

The six credits in literature are normally chosen as follows:

Second Year: French 20.270*, and three half courses from the series French 20.261* to 20.268*.

Third Year: two courses, from the series French 20.361 to 20.367;

Fourth Year: two courses from French 20.434 and the series 20.461 to 20.467.

Students should note that two of the literature credits must be obtained in courses with a French content, and two in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Concentration B:

This program consists of six credits in French language and linguistics and two credits in literature beyond the common First year. Students are furthermore required to take Linguistics 29.100 and must obtain one credit in a language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted from the language credit requirement.

The two credits in literature are selected as follows: two half-courses chosen from the series French 20.261* to 20.268*; one course chosen from the series French 20.361 to 20.367 or 20.461 to 20.467.

The six credits in French language and linguistics are normally taken as follows:

Second Year: French 20.211 (for Anglophones) or 20.212 (for Francophones), French 20.232* and a course chosen from French 20.231, 20.233*, 20.331 to 20.334*;

Third Year: two credits from the series French 20.312 to 20.334*.

Fourth Year: two courses, chosen from French 20.431 to 20.435.

No more than two credits from the series French 20.231, 20.331, 20.431 may count towards the requirements for Honours in French.

Students should note that one of the literature credits must be obtained in a course or courses with a French content, and one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Combined Honours

Combined Honours programs are available in French and English, German, History, Latin, Linguistics, Political Science, Russian or Spanish, and with other departments by arrangement.

The Honours programs combining two languages prepare the student either for graduate work or for the Ontario College of Education courses leading to the Interim High School Assistant's Certificate Type A, and must be planned in close consultation with the departments concerned. The combined programs with History or Political Science are suited for various kinds of public careers.

Two areas of concentration have been created in the Combined Honours program:

Concentration C:

This program consists of four credits in literature and one credit in French language and linguistics beyond the common First year.

The one credit in French language and linguistics is chosen from French 20.211 (for Anglophones), 20.212 (for Francophones), French 20.231 to 20.233*.

The four credits in literature are normally chosen as follows:

Second Year: two half-courses, from the series French 20.261* to 20.268*;

Third Year: one course, from the series French 20.361 to 20.367;

Fourth Year: two courses, from French 20.434 and the series French 20.461 to 20.467.

Students should note that at least one and a half of the literature credits must be obtained in courses with a French content, and at least one and a half in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Concentration D:

This program consists of four credits in French language and linguistics and one credit in literature beyond the common First year. One credit is also taken in Linguistics 29.100.

The one credit in literature consists of two half-courses from the series French 20.261* to 20.268* or, with permission, a course chosen from the series French 20.361 to 20.367, or from French 20.461 to 20.467, or the course French 20.434.

The four credits in French language and linguistics are normally chosen as follows:

Second Year: French 20.211 (for Anglophones) or 20.212 (for Francophones);

Third Year: one credit from the series French 20.312 to 20.334*;

Fourth Year: two credits from the series French 20.431 to 20.435.

No more than two credits from the series French 20.231, 20.331, 20.431 may count towards the requirements for Honours in French.

Students should note that at least one-half credit in literature must be obtained in a course with a French content, and at least one-half credit in a course with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Graduate Program

The Department offers studies leading to the M.A. degree. Emphasis is placed on work in specialized fields, a particular author or period, and research on problems of literary history. For further information please consult the Graduate Studies and Research Calendar.

Summer Language Program

The Department offers three immersion courses in French each summer. Supplementary activities and opportunities for language practice make for a total immersion atmosphere. These courses are French 20.101, 20.107 and 20.109, and each course provides two credits. Five hours class time a day. Offered in the Summer division only. Registration through French Placement.

The Department also offers four intensive language courses, French 20.100, 20.102, 20.108 and 20.111. These courses utilise the same methodology as in the Winter session, but outside activities make the courses more intensive. Registration through the French Placement of the Summer Day division. French 20.100 requires three hours class time in addition to lunch in French, French 20.102, 20.108, 20.111 require two hours class time and outside activities.

Courses Offered

Numbering system:

The first digit indicates the year in which the course is normally taken. The significance of the next two digits is as follows:

01 to 09: Language courses for students from other departments.

11 to 29: "Core" language and linguistics courses principally for French Majors or Honours.

31 to 49: Other language and linguistics courses.

51 to 59: Literature courses for students from other departments.

61 to 79: "Core" literature courses principally for French Majors or Honours.

81 to 99: Other literature courses.

French Placement for Language Students

Students who did not previously take a language course in the department and who wish to enrol in French 20.100, 20.101, 20.102, 20.103, 20.107, 20.108, 20.109, 20.111, 20.112 must consult the Department for French Placement.

Students from various departments (English, Political Science, Journalism, etc.) will be encouraged to enrol in special sections of French 20.102 and 20.108. The Department also offers special sections of French 20.211 and 20.312 reserved for Journalism students.

Notes:

1. Students enrolling in the reading course French 20.106* are not required to take the placement test.
2. Students desiring a First-year French credit to satisfy the language requirement of their department

or school should consult that department or school as to the acceptability of French 20.100, 20.101, 20.102, 20.103.

French 20.100

Elementary French

This course is designed for beginners in the language. Classes use audio-visual methods and emphasis is given to the spoken language for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors. Enrolment limited to twenty students per section. No supplemental or grade-raising examinations.

Registration through French Placement.

Day and Evening divisions: Five hours a week.

A. Ruprecht and members of the Department

French 20.101

Introductory Immersion French (two credits)

An intensive course designed for students with little or no previous knowledge of French, and combining the subject matter covered in French 20.100 and 20.102. The approach is largely audio-visual, with progressive introduction of written work. Extra-curricular activities will be organized outside of regular class hours. The credits gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities. Students not making satisfactory progress by the end of the first week will be transferred to the regular course (French 20.100). No single credit given. No supplemental or grade-raising examinations. Enrolment limited to twenty students per section.

Exclusions: Students already holding credit for, or taking French 20.100, 20.102 or 20.103 are ineligible for this course. No auditors.

Registration through French Placement.

French 20.102

Intermediate French (A)

An audio-visual course providing intensive practice in all aspects of oral expression and comprehension. Attention is also devoted to written expression and comprehension. Compulsory attendance for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors. Enrolment limited to twenty students per section.

No supplemental or grade-raising examinations.

Prerequisite: French 20.100 (20.001) or French Placement.

Day and Evening divisions: Three hours a week, plus one hour of laboratory.

D. Rosse and members of the Department

French 20.103

Intermediate French (B)

Review of basic grammar, oral and written exercises, contemporary reading selections. Compulsory attendance for both classes and laboratory work. The credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors.

Prerequisite: French 20.100 or French Placement.

Day division: Three hours a week, plus one hour of vocabulary.

J. Kealy

French 20.106*

Reading French

This course, given in English, is designed to enable specialists from other departments in the Humanities, Social Sciences and Sciences to read technical texts in French with reasonable ease. The goal is comprehension of the written word only. After a review of basic French grammar, attention is concentrated on reading selected material covering various fields of interest. The half-credit gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. No auditors.

Day division: One hour a week, throughout the year.

S. Robinson and members of the Department

French 20.107

Intermediate Immersion French (two credits)

A course in the Summer Language Program designed for students with previous knowledge of French, and combining the subject matter covered in French 20.102 and 20.108. The approach is largely audio-visual and audio-oral, with some written work. Extra-curricular activities are organized outside regular class hours. The credits gained from this course will not count as part of the specific requirements for a Major or Honours degree in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities. No single credit given. No supplemental or grade-raising examinations. Enrolment limited to twenty students per section.

Exclusions: Students already holding credit for, or taking French 20.102, 20.103, or 20.108 are ineligible for this course. No auditors.

Prerequisite: French 20.100 or French Placement before registration.

French 20.108

Advanced French for Non-Majors

Intensive study of the French language for students from other departments, based on audio-oral principles. Emphasis is placed on oral comprehension and expression, without omitting the written aspects of the language. The student is encouraged to speak French. Compulsory attendance at both classes and laboratory. No auditors. Enrolment limited to twenty students per section. No supplemental or grade-raising examinations.

Prerequisite: French 20.102 or 20.103, or French Placement.

Day and Evening divisions: Three hours a week plus laboratory assignments.

A. Ruprecht and members of the Department.

French 20.109 (20.115)

Advanced Immersion French (two credits)

A course in the Summer Language Program combining the subject matter of two advanced-level courses, French 20.108 and 20.111 for the development of oral proficiency as well as written and grammatical expression. Extra-curricular activities are organized outside regular class hours. Only one of the credits gained from this course will count as part of the specific requirements for a Major or Honours in French. Offered only in the Day division of the Summer session. Compulsory attendance at all classes and participation in all activities; no supplemental or grade-raising examinations. Enrolment limited to twenty students per section.

Exclusions: Students already holding credit for, or taking French 20.108, 20.111, 20.112 or 20.113 are ineligible for this course. No auditors.

Prerequisite: French 20.101, 20.102, 20.103, or French Placement before registration.

French 20.111

Advanced French (A)

Intensive study of the French language, both spoken and written, with particular attention to the vocabulary, syntax and the various levels of speech: oral reports and written assignments. This course is particularly designed for Anglophone students intending to specialize in French, but it is also open to all those students who already have a good grounding in the language. Compulsory attendance for classes. No auditors.

Prerequisite: French 20.102 or 20.103, or equivalent.

Day and Evening divisions: Two one-and-a-half-hour or three one hour lectures a week plus laboratory assignments.

H.P. Clive and members of the Department

French 20.112

Advanced French (B)

Comprehensive study of modern grammar. Acquisition of an extensive vocabulary and variety of idioms. Grammatical study of a selection of texts, both prose and poetry. Exercises in writing short essays. This course is particularly designed for Francophone students intending to specialize in French but it is also open to those students from other departments who possess the necessary proficiency. Compulsory attendance for classes. No auditors.

Day division: Two one-and-a-half-hour lectures a week.

E.F. Kaye

French 20.151

French-Canadian Literature

A course for students who do not intend to select French as a Major or Honours subject. Its purpose is to present the student with a survey of French-Canadian literature with emphasis on contemporary authors. Students are encouraged to use the French language for self-expression but need not do so. English may be used by the instructor in presenting and commenting on the texts.

Not offered 1980-81.

French 20.152

French Literature

A course for students who do not intend to select French as a Major or Honours subject. Its purpose is to present the student with a survey of French literature, with emphasis on contemporary authors. Students are encouraged to use the French language for self-expression but need not do so. English may be used by the instructor in presenting and commenting on the texts.

Not offered 1980-81.

French 20.161

Introduction to Literature: French Texts from the Seventeenth to the Nineteenth Century

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from Molière (seventeenth century) to Verlaine (nineteenth century).

Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103, or equivalent.

Day division: Three hours a week and one discussion group period.

E.F. Kaye

French 20.162

Introduction to Literature: French Texts from the End of the Nineteenth Century to the Present

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from Zola (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.266* as part of the specific requirements for a Major or Honours degree in French.

Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103, or equivalent.

Evening division: Three hours a week and one discussion group period.

E.N. Zimmerman

French 20.163

Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French-Canadian literature are selected within the period from Nelligan (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.268* as part of the specific requirements for a Major or Honours degree in French. Prerequisite: Ontario Grade 13 French, French 20.101, 20.102, 20.103, or equivalent.

Day division: Three hours a week and one discussion group period.

P. Smart

French 20.181

Civilization I

This course entails the study of a certain number of important elements of the culture and civilization of two French-speaking countries, alternatively French Canada and France: culture, customs, institutions, etc., with emphasis on the present situation. English may be used by the instructor.

Prerequisite: Permission of the Department.

Not offered 1980-81.

French 20.188

Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty of the French and the English departments, is designed for students who do not intend to select French as a Major or Honours subject. It provides a general introduction to the two major literatures of Canada, and is taught in the two languages. (Also listed as Canadian Studies 12.188 and English 18.188.)

Day division: Three hours a week.

P. Smart and members of the Department.

French 20.211

Techniques d'expression écrite et orale (A)

Ce cours prépare l'étudiant anglophone à composer des textes dans un français soutenu et nuancé, par l'enrichissement du vocabulaire, par l'emploi de mots précis, d'images et autres procédés utilisés dans la composition de textes. Pratique de la composition écrite et de l'exposé oral.

Prerequisite: French 20.111 or permission of the Department.

Day and Evening divisions: Three hours a week.

French 20.212

Techniques d'expression écrite et orale (B)

Ce cours destiné aux étudiants francophones comporte des objectifs similaires à ceux du cours French 20.211, mais s'inspire d'une méthode et d'ouvrages adaptés à leur niveau de compétence linguistique.

Prerequisite: French 20.112 or permission of the Department.

Day division: Three hours a week.

P. van Rutten

French 20.231

Initiation à la traduction

Techniques de la traduction. Traduction de l'anglais au français et du français à l'anglais. Textes d'intérêt général.

Prerequisite: French 20.111 or 20.112 or 20.113 or permission of the Department.

Day division: Three hours a week.

C.P. Fleischauer, J. Miquet, E. Voldeng

French 20.232*

Introduction à l'étude linguistique du français

Revue des éléments essentiels en recherche linguistique; application de ces éléments à la description et à l'analyse de la langue française; préparation aux différents cours de linguistique français offerts au Département.

Prerequisite: French 20.111 or 20.112 or 20.113 and Linguistics 29.100 or permission of the Department.

Day division, First term: Three hours a week.

P. Laurette

French 20.233*

Phonétique et phonologie du français

Révision des notions fondamentales de la phonétique française. Organes de la parole. Phonèmes du français. Phonétique articulatoire et acoustique; phonétique combinatoire. Prosodie. Notions fondamentales de la phonologie du français. Les traits distinctifs du français.

Prerequisite: French 20.111 or 20.112 or 20.113 and Linguistics 29.100 or permission of the Department.

Not offered 1980-81.

French 20.261*

La littérature du Moyen âge

Introduction aux principaux courants de la littérature médiévale et approfondissement d'un ou plusieurs aspects de celle-ci par l'étude détaillée de certains textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Not offered 1980-81.

French 20.262*

La littérature du XVI^e siècle

Introduction aux théories de la Pléiade et aux aspects principaux de la littérature de la Renaissance, avec approfondissement de différents aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Evening division, First term: Three hours a week.

H.P. Clive

French 20.263*

La littérature du XVII^e siècle

Le classicisme et/ou le mouvement baroque dans la littérature française du XVII^e siècle, notamment le théâtre. Etude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Not offered 1980-81.

French 20.264*

La littérature du XVIII^e siècle

La fin du classicisme, le siècle de la raison, les Encyclopédistes et les Philosophes. Approfondissement d'un ou plusieurs aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, Second term: Three hours a week.

R. Galliani

French 20.265*

La littérature du XIX^e siècle

Introduction aux principaux courants de la littérature française du XIX^e siècle: Romantisme, Réalisme, Parnasse, Symbolisme. Etude plus détaillée d'un ou plusieurs de ces aspects dans un choix de textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Not offered 1980-81.

French 20.266*

La littérature du XX^e siècle

Survol de la littérature française moderne du Naturalisme au Nouveau roman; l'unité et la diversité de cette littérature avec des exemples choisis parmi les textes représentatifs d'un ou plusieurs aspects les plus marquants. This course will not count as part of the specific requirements for a Major or Honours degree in French if taken in conjunction with French 20.162.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, First term: Three hours a week.

E. Voldeng

French 20.267*

La littérature du XIX^e siècle au Canada français

Introduction aux principaux courants idéologiques et littéraires. Les débuts du roman et/ou de la poésie d'après quelques textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Day division, First term: Three hours a week.

O. Condemine

French 20.268*

La littérature du XXe siècle au Canada français

Evolution des principaux genres littéraires vue dans une optique sociale et esthétique. Le cours portera principalement sur l'époque contemporaine. This course will not count as part of the specific requirements for a Major or Honours degree in French if taken in conjunction with French 20.163.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Evening division, Second term: Three hours a week.
J. Kealey

French 20.270*

Initiation à la critique littéraire

Examen détaillé d'un certain nombre de textes pour développer l'art de l'analyse critique et esthétique d'une œuvre littéraire. Revue des principales méthodes de critique littéraire: approche historique, sociologique, psychanalytique, sémiologique etc.

Prerequisite: French 20.161, or 20.162 or 20.163 or permission of the Department.

Not offered 1980-81.

French 20.281

Civilisation II

Ce cours poursuivra les études menées dans le cours de Civilisation I en approfondissant certains aspects se attachant à la notion générale de "civilisation" et offrira en alternance un contenu français et canadien-français pour permettre cette continuation.

Prerequisite: Permission of the Department.

Not offered 1980-81.

French 20.282

Le théâtre: Théorie et pratique

Examen détaillé de plusieurs œuvres théâtrales avec, pour objet, la préparation à des travaux pratiques (diction, interprétation théâtrale) et la participation à une ou plusieurs pièces présentées dans le cadre du cours.

Prerequisite: A First-year course in French or permission of the Department.

Not offered 1980-81.

French 20.312

Cours de grammaire descriptive

Etude de la langue française par une réflexion sur les structures de la langue et l'utilisation des grandes grammaires descriptives du français. Méthodologie de la recherche grammaticale, établissement et bibliographies et de corpus. Exercices pratiques. Cours commun aux étudiants anglophones et francophones.

Prerequisite: French 20.211 or 20.212 or 20.213 or permission of the Department.

Day and Evening divisions: Three hours a week.

A. Ruprecht, P. van Ruten

French 20.331

Traduction avancée

Traduction de textes spécialisés (scientifiques, administratifs, commerciaux, juridiques, etc.) de l'anglais au français et du français à l'anglais.

Prerequisite: French 20.231* or permission of the Department.

Evening division: Three hours a week.

S. Robinson

French 20.332

Français canadien

Histoire de la langue française au Canada; la structure phonétique, morphologique et syntaxique du franco-canadien; le lexique: archaïsmes, anglicismes, canadienismes; variations sociales et régionales: problème de la norme.

Prerequisite: French 20.232* or permission of the Department.

Not offered 1980-81.

French 20.333*

Histoire de la langue (A)

Etude phonétique, graphique, syntaxique et morphologique du Vieux français (XIIe siècle) et du Moyen français (XVe siècle), avec mise en valeur des phases intermédiaires pour les principaux aspects du langage.

Not offered 1980-81.

French 20.334*

Histoire de la langue (B)

Les transformations phonétiques, graphiques, morphologiques et syntaxiques les plus importantes du français de la Renaissance au français moderne.

Not offered 1980-81.

French 20.361

Littérature d'imagination (A)

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Not offered 1980-81.

French 20.362

Littérature d'imagination (B)

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Not offered 1980-81.

French 20.363

Etudes littéraires

Etude d'un phénomène littéraire de portée plus spécifique que dans les cours à caractère historique de deuxième année, mais qui se rattache encore à l'historicité, tel que la définition et l'illustration de la notion de mouvement, de courant, d'école.

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Not offered 1980-81.

French 20.364

Le théâtre

Etude de quelques pièces choisies pour leur valeur intrinsèque, leur intérêt scénique et leur importance dans l'histoire du théâtre et de la littérature. Situation des pièces dans l'histoire du théâtre. Arrière-plan social. Etudes des circonstances de leur composition

(l'auteur, sources, genèse) et de leur représentation (public, troupes, comédiens etc.). Etude interne des pièces: personnages, décors, intrigue, thèmes, structures dramatique, éléments du style. Accueil de la pièce, sa signification, sa portée et son influence. En 1980-81, le cours sera consacré au théâtre canadien-français.

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Evening division: Three hours a week.

O. Condemine

French 20.366

Littérature et sciences humaines (I)

Les conditions de production, de fonctionnement et de réception des écrits littéraires. La signification socio-culturelle du fait littéraire: processus d'information et de valorisation dans les cultures en transformation. Lesage, Marivaux, Montesquieu, Voltaire, Diderot, Rousseau et la société du XVIII^e siècle.

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Day division: Three hours a week.

R. Galliani

French 20.367

Méthodologie et littérature (I)

Discussion d'un certain nombre de conceptions critiques du texte littéraire compris comme système, c'est-à-dire comme interaction de phénomènes déductibles du texte.

Prerequisite: A course from series French 20.261* to 20.268* or permission of the Department.

Not offered 1980-81.

French 20.381

Aspects de la littérature canadienne-française

Etude d'un thème, d'un mouvement ou d'un courant de la littérature québécoise. On se penchera surtout sur l'évolution d'un de ces aspects étudiée dans une optique à la fois historique, sociale et artistique.

Prerequisite: French 20.267* or 20.268* or permission of the Department.

Not offered 1980-81.

French 20.431

Traduction littéraire

Traduction de l'anglais au français et du français à l'anglais de textes littéraires. Analyses de traductions déjà parues. Retraduction.

Prerequisite: French 20.231 or permission of the Department.

Not offered 1980-81.

French 20.432

Morphologie et syntaxe du français

Grammaires modernes du français. Le cours a pour objet de familiariser les étudiants avec les grammaires modernes du français issues des derniers développements de la linguistique. On étudiera en particulier les systèmes grammaticaux.

Prerequisite: French 20.312 or permission of the Department.

Day division: Two hours a week.

S. Robinson

French 20.433

Sémantique et lexicologie du français

Les méthodes modernes de la sémantique appliquées à l'analyse des textes littéraires. Sémantique, lexicologie et lexicographie françaises. Le cours portera en outre sur l'évolution de la sémantique, le concept de sens et de signification, la détermination des significations, l'évolution des sens et ses lois et l'établissement du lexique et sa structuration.

Prerequisite: Permission of the Department.

Not offered 1980-81.

French 20.434

Stylistique littéraire

Le cours est destiné à sensibiliser les étudiants aux procédés de l'expression littéraire et à les préparer à la critique stylistique. On étudiera en particulier les points suivants: la théorie du style littéraire, la fonction de la langue dans l'expression littéraire; la phonostylistique: utilisation des accents, des rythmes, des sons; la stylistique des mots: l'utilisation du vocabulaire, les effets affectifs, les effets par évocation; les translations figuratives: métaphores, métonymies, etc.; la stylistique de la phrase, etc.

Prerequisite: French 20.232* and 20.233* or permission of the Department.

Not offered 1980-81.

French 20.435

Linguistique appliquée: pédagogie de l'enseignement du français

Revue des notions de linguistique, de phonétique et de psycholinguistique se rapportant à l'apprentissage et à l'enseignement du français comme langue première et langue seconde. Etude des processus d'acquisition de la langue. Description de la langue pour la préparation à l'enseignement. Critique scientifique des méthodes et des méthodologies d'enseignement. Etude des relations entre les recherches sur la communication et l'apprentissage du français.

Prerequisite: French 20.232* or permission of the Department.

Evening division, First term: Four hours a week.

J.-J. van Vlasselaer

French 20.461

Littérature d'Idées (A)

Not offered 1980-81.

French 20.462

Littérature d'Idées (B)

Le roman au XIX^e siècle: Etude et analyse d'un certain nombre de romans choisis pour leur intérêt et leur importance dans l'évolution d'un des genres majeurs du siècle. Auteurs principaux: Benjamin Constant, Victor Hugo, Stendhal, Balzac, Zola.

Prerequisite: A course from series French 20.361 to 20.367 or permission of the Department.
Evening division: Two hours a week.
E.F. Kaye

French 20.463

Aspects de la littérature (A)

Not offered 1980-81.

French 20.464

Aspects de la littérature (B)

L'œuvre romanesque d'Hubert Aquin et d'André Major. Etude de deux romanciers québécois contemporains dans une perspective socio-culturelle (mythes, espace, temps et personnages comme reflets de la société québécoise).

Prerequisite: A course from the series French 20.361 to 20.367 or permission of the Department.
Not offered 1980-81.

French 20.466

Littérature et sciences humaines II

Emile Zola, romancier naturaliste. Etude de l'univers romanesque de Zola, à travers l'analyse des œuvres représentatives du cycle des Rougon-Macquart: vision naturaliste et critique sociale, élément épique, dimensions mythique et idéologique.

Textes étudiés: *La Curée, La faute et l'Abbé Mouret, l'Assommoir, Nana, Pot-Bouille, Germinal, La Terre, La Bête Humaine, L'Argent, Le Docteur Pascal.*

Prerequisite: A course from the series French 20.361 to 20.367 or permission of the Department.
Not offered 1980-81.

French 20.467

Méthodologie et littérature II

Application d'une ou plusieurs méthodes scientifiques, d'orientation généralement moderne, à l'étude d'œuvres littéraires. Sartre et Camus: études thématiques, études formelles. Comparaison d'un certain nombre d'interprétations ou lectures; lectures "traditionnelles" visant à expliciter le contenu en tant que tel (thèmes, signification philosophique etc), lectures "modernes" visant à expliciter le texte littéraire en tant que système organisé, structurel.

Prerequisite: French 20.367 or permission of the Department.

Day division: Three hours a week.

E.N. Zimmerman

French 20.481

Littératures francophones

Not offered 1980-81.

French 20.482

Initiation à la recherche

Comment et où effectuer des recherches pour l'étude d'une œuvre, d'un auteur ou d'un thème. Les sources bibliothécaires et autres. Travaux pratiques: établissement de bibliographies, de fiches, d'une édition critique etc.

Prerequisite: Permission of the Department.

Not offered 1980-81.

French 20.483

Tutorial

Prerequisite: Permission of the Department.
Not offered 1980-81.

Graduate Courses Open to Undergraduates

(With permission of the Department)

French

20.511 Montaigne

20.521 Le "bon sauvage" depuis La Hontan jusqu'à Chateaubriand

20.541 Littérature et Psychanalyse. (Textes de la fin du XIXe et du XXe siècle)

20.551 Une lecture sociologique de *A la Recherche du temps perdu* de Marcel Proust

20.571 Gabrielle Roy et Gérard Bessette

20.571 Poésie et Poétique (Lectures d'un poète moderne: Paul Valéry) (Summer)

Courses planned for Summer School and Evening Division

Due account will be taken in the planning of Evening courses for the Winter sessions and Summer school programs over the next three years of the desirability of enabling students to complete a degree program over a period of four years.

Department of Geography

Officers of Instruction

Chairman

D.B. Knight

Supervisor of Graduate Studies

J.K. Torrance

Supervisor of Honours and Majors Studies (B.A.)

J.E. Tunbridge

Supervisor of Honours Studies (B.Sc.)

P.J. Williams

Supervisor of Special and Part-time Students

D.M. Anderson

Professors

J.P. Johnson, Jr.

G.C. Merrill

D.M. Ray

D.R.F. Taylor (*Joint appointment, International Affairs*)

P.J. Williams

Associate Professors

D.M. Anderson

D. Bennett

J. Clarke

D.B. Knight

M.W. Smith

J.K. Torrance

A.I. Wallace

T.P. Wilkinson

Assistant Professors

M.F. Fox

J.E. Tunbridge

Map Librarian

B.E. Farrell

Instrumentation and Research Laboratories

L. Boyle

A. Pendlington

Programmer/Analyst

S. Prashker

Adjunct Professors

S. Raby

R.O. Ramseier

G.D. Taylor

G.C. Topp

Sessional Lecturers

R. Defoe

D. De Lisle

D. Monahan

R. Ryerson

General Information

The Department of Geography has programs of study leading to the following degrees: B.A., B.A. (Honours), and B.Sc. (Honours). Concentrations can be developed in: urban studies; regional and economic development (with particular reference to Canada, areas within the Third World and northern lands); economic geography; resource and land use planning; cultural, historical and political geography; and physical geography and environmental management. Techniques courses (including air photo interpretation, remote sensing, and cartography) have a direct applied character. A mixture of classroom, laboratory, seminar and field studies is used in the program.

It is also possible to complete joint Majors and Honours programs between Geography and many Arts and Social Science disciplines, including Law, Economics, History, Anthropology, Psychology, Political Science, Canadian Studies, Sociology, Journalism and Biology. Even without the formality of a combined program it is possible for those pursuing a single Major or Honours program in Geography to develop a subsidiary thematic or regional concentration by taking a variety of non-Geography electives. Please contact the Department of Geography for information about these possibilities.

Courses are normally taken in the year corresponding to the first digit in the course numbers. However, Third-year students may take additional 200-level and/or, with the necessary prerequisites, 400-level courses. Students without the formal prerequisites for courses may take Geography courses with permission of the Department.

The Department of Geography has undertaken extensive program and course reorganisation, in the process changing many full-credit courses to half-credit courses. A student who has credit for a full-credit course may not gain further credit for the new half courses which replace it. For guidance the old course numbers appear in parentheses after the new course numbers. Detailed course descriptions are available from the Department of Geography.

Undergraduate Courses in Geography

45.101 Geographic Web		45.102* Contemporary Issues I		45.103* Contemporary Issues II	
45.210* Physical Environment	45.200* Cartography	45.201* Statistics	45.220* Global Economy	45.230 Cultural-Landscape	
45.211* Environmental Management	45.202* Air Photos	45.221* Contemporary Economies	45.231* Cultural-Political		
45.212* Weather	45.299* Field Techniques				
45.308 Soils	45.303* Quantitative Methods	45.320* Canadian City	45.305* Canada	45.331* Caribbean Cultural	
45.312 Geomorphology	45.325 Cartography & Computer Cartography	45.321* Systems of Cities	45.306* Canada	45.332* S.W. Pacific Cultural	
45.345* Climatology	45.398* Research Methods	45.329* Development	45.330* Africa	45.335 Historical	
45.346* Weather	45.399* Field Studies	45.333* Planning	45.350* W. Europe	45.337* Political	
		45.340 Economic	45.351* Northlands	45.374 Law	
		45.370* Population	45.360* USSR		
			45.361* E. Europe		
			45.380* Asia		
			45.395* Selected Region		
Physical Geography	Techniques Methodology	Planning Urban-Economic	Regional	Cultural-Historical	
45.402* Problems Tutorial	45.403* Remote Sensing	45.421* Urban Themes	45.401* Problems Tutorial	45.431* Cultural	
45.411* Quaternary	45.412* Terrain Analysis	45.422* Urban Social		45.435* Historical	
45.414* Microclimatology	45.415* Slopes	45.433* Urban Planning		45.440* Political	
45.417* Glacial	45.418* Periglacial	45.434* Transport			
45.424* Soil Mechanics		45.442* Economic			
		45.443* Land Resource Use			
45.496 Honours Research Project		45.498 Honours Research Essay			

* denotes half-course usually given in one term

Major Programs

Major in Geography

This program is offered for students who wish a liberal arts education with emphasis in Geography. Guidance on patterns of courses for particular interests is available from the Department.

Students admitted to a single Major in Geography are required to complete the equivalent of at least seven credits in Geography, which must include:

1. *Either* Geography 45.101 or 45.102* and 45.103*;
2. Geography 45.200*, 45.201*, 45.202*, 45.210*, 45.220*, 45.230*, 45.299*;
3. At least two and a half additional Geography credits, of which two must be at the 300 level or 400 level.

Combined Majors

Students admitted to a Combined Major in Geography and another department are required to complete the equivalent of at least five credits in Geography which must include:

1. *Either* Geography 45.101 or 45.102* and 45.103*;
2. Two of Geography 45.210*, 45.220*, 45.230*;
3. Two of Geography 45.200*, 45.201*, 45.202*;
4. At least two additional Geography credits (Geography 45.299* is recommended); at least one Geography credit must be at the 300 level.

Honours Programs

The Honours program in Geography is offered for students who wish to prepare for graduate study, a career in planning, government, business, or other specialization in which the field of Geography offers the appropriate training. Information on recommended patterns of courses related to various interests is available from the Department. There is substantial freedom in the program for students to take courses of special interest in the University, as well as courses in Geography and related disciplines.

Students reading for an Honours degree must satisfy the general University regulations for Honours (pp. 91-92).

B.A. with Honours in Geography

Students admitted to the Honours Geography program are required to complete the equivalent of twenty credits beyond Senior Matriculation or Qualifying University year in Arts or Social Sciences. The equivalent of at least eleven credits must be in Geography and must include:

1. *Either* Geography 45.101 or 45.102* and 45.103*;

2. Geography 45.200*, 45.201*, 45.202*, 45.210*, 45.220*, 45.230*, 45.299*;

3. Geography 45.398* and 45.498;

4. At least five additional Geography credits, of which at least two must be at the 300 level and at least two must be at the 400 level.

Students wishing to take the Type A Specialist Certificate at an Ontario College of Education are advised to consult the Supervisor of Honours Studies as early as possible in order that an appropriate program can be arranged.

Combined Honours

Students taking Combined Honours in Geography and another subject are required to complete the equivalent of at least seven credits in Geography which must include:

1. *Either* Geography 45.101 or 45.102* and 45.103*;
2. Two of Geography 45.210*, 45.220*, 45.230*;
3. Two of Geography 45.200*, 45.201*, 45.202*;
4. Geography 45.299* or an approved field course in the other Honours department;
5. *Either*: Geography 45.398* and 45.498 plus at least two additional Geography credits, of which at least one must be at the 300 level and at least one must be at the 400 level; *or*: an Honours Research Essay or equivalent in the other Honours department with at least three and a half additional Geography credits which must include at least one credit at the 300 level and two at the 400 level.

Fourth-year Honours students may take Geography courses listed in the Graduate Studies and Research Calendar only with permission of the Department.

B.Sc. with Honours in Geography

The Bachelor of Science Honours program in Physical Geography is designed to give the student an understanding of the earth's surface as man's physical environment. The student will specialize in the study of properties and processes of the earth's surface materials and atmosphere.

The program consists of twenty credits beyond Senior Matriculation or Qualifying University year Science selected in a pattern approved by the Supervisor of Honours Studies in the Geography Department, and consistent with the following requirements:

1. The First year of the program will be consistent with Science Faculty requirements for First year Science
2. The program will contain eight credits in Geography at or beyond the 200 level, including the Honours Research Project 45.496, which should be taken in the final year.
3. The remaining seven credits must include:
 - (a) Two approved credits in Science, not in Geography, beyond the 100 level;

- (b) Two approved credits in Science, Computing Science or Engineering;
 (c) Two Arts or Social Science electives, one of which must be an approved credit not in Geography;
 (d) One free elective.

4. In meeting the requirements 1 to 3, seven credits to be taken must be selected from the lists below and should include Geography 45.210*, 45.211* or 45.212*, 45.299*, 45.308, 45.312, and 45.345* or 45.346*. In special cases students may take an appropriate graduate course in their final year, with permission of the Supervisor of Graduate Studies.

Physical Geography Courses

- 45.200* Introduction to Cartography
 45.201* Statistical Methods in Geography
 45.202* Air Photo Interpretation and Remote Sensing
 45.210* The Physical Environment
 45.211* Geomorphology and Environmental Management
 45.212* The Value of Weather
 45.299* Introduction to Field Techniques
 45.303* Quantitative Geography
 45.308* Geography of Soils
 45.312* Geomorphology
 45.325* Cartography and Computer Mapping
 45.345* Physical Climatology and Climatic Change
 45.346* Understanding Weather
 45.402* Problems in Physical Geography
 45.403* Remote Sensing of the Environment
 45.411* Quaternary Geography
 45.412* Terrain Analysis
 45.414* Microclimatology
 45.415* Slope Development: Forms, Processes and Stability
 45.417* Glacial Geomorphology
 45.418* Selected Topics in Physical Geography
 45.424* Soil Mechanics

Physics 75.100 or 75.105 (required course in the Second year of the program if not taken in First year)

Mathematics 69.257* or 69.258*

Geology 67.233* and 67.281*

A recommended program is:

First Year

Mathematics 69.107* and 69.117*;
Chemistry 65.100;
Geology 67.100;
 One of: Geography 45.210* with 45.211* or 45.212* or Biology 61.100, or Physics 75.100;
 Arts or Social Science elective (may not be Geography 45.101 if 45.210* with 45.211* or 45.212* is selected).

Second Year

Geography 45.200*, 45.202*, 45.299*;
 One of: Geography 45.210* with 45.211* or 45.212*, 45.308, 45.345* or 45.346* with an additional half

credit from the preceding list of approved physical Geography courses;
Mathematics 69.257*;
 Science elective or Physics 75.100 or 75.105 (required course in Second year if not taken in First year);
 Arts or Social Science elective.

Third Year

Geography 45.312;
 Either Geography 45.308; or 45.345* or 45.346* with an additional half credit from the preceding list of approved physical Geography courses;
 One 400-level Geography credit;
 One Science continuation credit;
 Arts or Social Science elective.

Fourth Year

Three 400-level Geography credits (including 45.496);
 One Science continuation credit;
 Free option.

Notes:

1. A Human Geography course is recommended as one of the Arts or Social Science electives.
2. The following courses are normally offered in alternate years:
 45.211*/45.212*; 45.345*/45.346*; 45.411*/45.417*; 45.414*.

Graduate Programs

The Department of Geography offers programs of study leading to a Master's degree in Human Geography, Physical Geography, and Geotechnical Science. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

Geography 45.101

The Geographic Web

An introductory course concerned with the structure of two major systems: the ecological system that links man and his environments, and the spatial system that links one region or place to another. Concepts and methods useful in geography are introduced through an integrated view of current concerns with the environment and ecology, and with regional contrasts and imbalances in human welfare. Four topic areas are introduced: I. practical work in geography; II. the physical environment; III. population, resources and space; IV. cultural, urban and political systems. Day and Evening divisions: Section A: Lectures and discussion three hours a week; Section B: Regulated, self-instructional mode three hours a week.

J. Clarke, M.F. Fox, J.P. Johnson, Jr., T.P. Wilkinson

Geography 45.102*

Geographic Analysis of Contemporary Issues: Environment, Economy and Resource Use

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which environmental, economic geography and resource problems are crucial; organized around a series of themes which include global climatic change, desertification, global food problems, the geographic impact of declining oil supply, and the world oceans — changing conditions and role.

Day division, First term: Lectures two hours a week, laboratory/discussion one hour a week.

J.K. Torrance

Geography 45.103*

Geographic Analysis of Contemporary Issues: Cultural and Political

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which political and cultural geography is central; organized around a series of themes including colonial linkages to Third World development, metropolitan dominance and "mini-states", diffusion of technology and values, territorial integration and fragmentation.

Day division, Second term: Lectures two hours a week, laboratory/discussion one hour a week.

J.E. Tunbridge

Geography 45.200*

Introduction to Cartography

Introduction to cartography and the collection of geographic data.

Prerequisite: Geography 45.101 or Geography 45.102* and Geography 45.103* or permission of the Department.

Evening division, First term: Lectures two hours a week, laboratory two hours a week.

Geography 45.201*

Statistical Methods in Geography

Introduction to statistical analysis as applied to geography.

Prerequisite: Geography 45.101 or Geography 45.102* and Geography 45.103* or permission of the Department.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

M.F. Fox

Geography 45.202*

Air Photo Interpretation and Remote Sensing

Introduction to the techniques of air photo interpretation, remote sensing of the environment and elements of photogrammetry.

Prerequisite: Geography 45.101 or 45.102* and 45.103* or permission of the Department.

Evening division, Second term: Lectures two hours a week, laboratory two hours a week.

M.F. Fox

Geography 45.210* (part 45.210)

The Physical Environment

The physical geography of natural environments, emphasizing the kinds of earth materials, their properties, and the processes which act upon them.

Prerequisites: Geography 45.101 or 45.102* and 45.103* or permission of the Department.

Day division, First term: Lectures two hours a week, laboratory three hours a week.

M.W. Smith, P.J. Williams

Geography 45.211* (part 45.210)

Geomorphology and Environmental Management

Examination of earth surface materials, processes and hazards in relation to their physical and socio-economic importance; environmental impacts and the need for land management.

(Offered in alternate years with Geography 45.212*.)

Prerequisite: Geography 45.210* or permission of the Department.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

T.P. Wilkinson, P.J. Williams

Geography 45.212* (part 45.210)

The Value of Weather

Recognition and evaluation of weather and climate as resources; social, economic and institutional implications; the effect of man on the atmosphere; environmental management and planning priorities.

(Offered in alternate years with Geography 45.211*.)

Prerequisite: Geography 45.210* or permission of the Department.

Not offered 1980-81.

Geography 45.220* (part 45.220)

Geography of the Global Economy

An overview of the global economy, focusing on the geographical pattern of its evolution and its resource base. Theories of spatial relationships of various scales, including the development of core-periphery contrasts, national urban systems and regional specialisations in agriculture and industry.

Prerequisite: Geography 45.101 or 45.102* and 45.103* or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

I. Wallace

Geography 45.221* (part 45.220)

Geographical Challenges of Contemporary Economies

Geographical analysis of problems facing modern economies, within different political frameworks and at varying levels of technological development. Includes provision of food and energy supplies, the activity of multinational corporations, policies to combat regional economic disparities and problems of growth and change in urban areas.

Prerequisite: Geography 45.220* is recommended.

Day division, Second term: Lectures and discussion three hours a week.

I. Wallace

Geography 45.230* (part 45.230)

The Cultural Landscape

Man-moulded and man-modified landscapes and the perception of these landscapes by different ethnic groups are explored; processes of landscape change in the Ottawa Valley and Eastern Ontario are compared with other areas in Canada and the World; the impacts of political and religious ideology and developmental processes are examined.

Prerequisites: Geography 45.101 or 45.102* and 45.103* or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

D.B. Knight

Geography 45.231* (part 45.230)

Conflict and Accord in the Modern World

The role of boundaries, especially cultural and political; the meanings given to space, with emphasis on their impact on development processes and on ethnic and international conflict; culture area, cultural ecology, and plural societies.

Prerequisite: Geography 45.230* is recommended.

Day division, Second term: Lectures and discussion three hours a week.

D.B. Knight

Geography 45.299*

Introduction to Field Techniques

An intensive week-long field camp (following Fall registration) and meetings through the First term. Geographical techniques of observation, data gathering, measurement and analysis will be explored in group work and individual projects. Cost of room and board relating to the field camp are borne by the student. Required for Geography Majors, Honours and Combined Honours students.

Prerequisites: Geography 45.101 or 45.102* and 45.103* or permission of the Department.

Day division, First term: One week field camp and one hour lecture/laboratory per week.

M.F. Fox (co-ordinator) and members of the Department

Geography 45.303*

Quantitative Geography

Multiple-regression and factor analytic techniques as applied to problems of classification, regionalization, explanation and hypothesis testing in geographical research. Various taxonomic algorithms are examined and an introduction to geographical models is provided. Prerequisites: Geography 45.201* and enrolment in a Geography degree program or permission of the Department.

Day division, First term: Lectures three hours a week.

M.F. Fox

Geography 45.305* (part 45.305)

Canada: A Geographic System

Integration of the various interpretations of the geography of Canada, including staple-export theory, metropolitanism, and heartland-hinterland relation-

ships, into a broad systems framework which reveals the interdependencies among various policy issues of concern to Canadians.

Prerequisite: Third-year standing or permission of the Department.

Evening division, First term: Lectures three hours a week.

D. De Lisle

Geography 45.306* (part 45.305)

Canada: A Regional Mosaic

Regional characteristics of Canada; concepts of and the nature of regionalism; comparisons of the nature and underlying causes of regional differences which underlie many current Canadian problems.

Prerequisite: Third-year standing or permission of the Department.

Evening division, Second term: Lectures three hours a week.

D.M. Anderson

Geography 45.308

Geography of Soils

The chemical and physical properties of soils; soil types and their distribution.

Prerequisite: Geography 45.210* or permission of the Department.

Day division: Lectures two hours a week, laboratory three hours a week.

J.K. Torrance

Geography 45.312

Geomorphology

Geomorphic processes and related landforms with emphasis on glacial and fluvial activity. Field and laboratory methods used in analysis of landforms and geomorphic processes.

Prerequisites: Geography 45.201* and 45.210* or permission of the Department.

Day division: Lectures two hours a week, laboratory three hours a week.

J.P. Johnson, Jr., T.P. Wilkinson

Geography 45.320* (part 45.320)

The Canadian City: Internal Structure and Contemporary Problems

The internal structure of the western city with explicit application to Canadian cities; current urban problems and their attempted resolutions, with particular focus on: inner city revitalization and peripheral expansion, movement toward metropolitan organization of the city; evolving transportation systems and their interaction with land use.

Prerequisite: Geography 45.220* or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J.E. Tunbridge

Geography 45.321* (part 45.320)

Systems of Cities: Global Perspectives

Examination of global evolution of urban systems; contemporary city systems as a theoretical concept, emphasizing current research into growth mechanisms and prospects for their regulation; the global diversity of urbanism, taking an overview of systems and considering contrasting internal patterns.

Prerequisite: Geography 45.220* or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

J.E. Tunbridge

Geography 45.325

Cartography and Computer Mapping

The history and development of map making. The compilation, production and uses of the modern topographic map. Special purpose maps and their use, construction and development; introduction to computer mapping, its use and applications.

Prerequisites: Geography 45.200* or permission of the Department.

Evening division: Lectures two hours a week, laboratory three hours a week.

R. Defoe

Geography 45.329* (part 45.330)

Geography of Development

Evolution of patterns of world inequality and the problem of development; theories and case studies illustrating different strategies for growth and development; spatial and ecological dimensions and the role of culture and institutional frameworks; rural-urban interaction; "developed" and "underdeveloped" countries as one interdependent system.

Prerequisite: Geography 45.220* or 45.230* or 45.231* or permission of the Department.

Evening division, First term: Lectures three hours a week.

Geography 45.330* (part 45.330)

Developing Nations of Inter-Tropical Africa

Geographical aspects of the problems and potential of the developing nations of inter-tropical Africa. The interaction of men and environment is examined as well as the historical developments which have led to some of the present day situations.

Prerequisite: Third-year standing or permission of the Department.

Evening division, Second term: Lectures three hours a week.

Geography 45.331*

Cultural Geography of the Caribbean

Caribbean lands and societies are examined from the viewpoint of cultural geography, with an emphasis upon the culture history that has produced the pluralistic societies that characterize the modern Caribbean.

Prerequisite: Geography 45.230* or 45.231* or permission of the Department.

Not offered 1980-81.

Geography 45.332*

Cultural Geography of the South West Pacific

Cultural and racial complexities and diverse patterns of population distribution and man/land relationships to be examined from the viewpoint of cultural geography and related to problems of development in Australia, New Zealand and the islands of the South West Pacific.

Prerequisite: Geography 45.230* or 45.231* or permission of the Department.

Evening division, First term: Lecture three hours a week.

D.B. Knight

Geography 45.333*

Land Use, Regional Development and Planning in Canada

Introduction to land resource planning in Canada, with the chief emphasis on Ontario. The forces affecting land use in Canada, evolution of the conservation movement, the watershed authority, the roles of governments in local, regional and national planning, and relationships between conservation, regional development and land resource planning. Selected Ontario and federal legislation is examined.

Prerequisite: Third-year standing or permission of the Department.

Day division, First term: Lectures two hours a week, one hour discussion group.

D.M. Anderson

Geography 45.334*

Renewable Resource Planning in a Local Area

A planning-oriented examination of a local river basin, aimed at developing a coordinated plan for renewable resource management, utilizing existing local, regional and watershed legislation in Ontario. Students work in project teams, under supervision, to develop a practical plan for land use, water resource management, urban development, recreational space and environmental preservation.

Prerequisites: Geography 45.333* or permission of the Department.

Day division, Second term: Lectures, discussion and project work three hours a week.

D.M. Anderson

Geography 45.335

Historical Geography of Canada

An introduction to the methodology of historical geography and to the historical geography of Canada. Prerequisite: Geography 45.230* or History 24.230 or permission of the Department.

Day division: Lectures and discussion three hours a week.

J. Clarke

Geography 45.337* (part 45.440)

Systematic Political Geography

A systematic analysis of political structures, processes and behaviour from a geographic perspective through examination of the "classical" works in political geography and current literature.

Prerequisite: Geography 45.230* or 45.231* or permission of the Department.

Day division, First term: Lectures three hours a week.

Geography 45.340

Geography of Economic Systems

The geographic and economic fundamentals of commodity production, trade and consumption analysed in a systems framework. Factors in the growth and development of spatial systems and the resulting regional economic structures. Dynamics of change in the world economy.

Prerequisites: Geography 45.220* or permission of the Department.

Day division: Lectures and discussion three hours a week.

D.M. Ray

Geography 45.345* (part 45.345)

Physical Climatology and Climatic Change

Explanation of global climates in terms of the energy and water balance regimes of the earth and its atmosphere; history of climate; contemporary issues in climatic change and possible future climates. (Offered in alternate years with Geography 45.346*.)

Prerequisite: Geography 45.210* or 45.212* or permission of the Department.

Day division, Second term: Lectures two hours a week, laboratory two hours a week.

M.W. Smith

Geography 45.346* (part 45.345)

Understanding Weather

Observation and interpretation of weather through understanding of physical processes behind weather events; weather types and weather systems of mid-latitudes and the Ottawa region; analysis of weather information and maps, and exercises in forecasting. (Offered in alternate years with Geography 45.345*.)

Prerequisite: Geography 45.210* or 45.212* or permission of the Department.

Not offered 1980-81.

Geography 45.350* (part 45.350)

Western Europe

The physical and cultural regions of Western Europe will be examined. Emphasis is placed on the influence of the varying physical and cultural resources on the evolving patterns of European organization and relationships.

Prerequisites: Third-year standing or permission of the Department.

Not offered 1980-81.

Geography 45.351* (part 45.351)

Northern Lands

An analysis of the physical characteristics, historical geography, economic resources, settlement patterns and problems and the future development of Arctic and Subarctic lands, focusing primarily on Canada.

Prerequisite: Third-year standing or permission of the Department.

Day division, Second term: Lectures three hours a week.

M.W. Smith

Geography 45.360*

Soviet Union

An examination of the problems of the Soviet Union emphasizing locational factors, man/land relationships and areal differentiation.

Prerequisites: Third-year standing or permission of the Department.

Day division, First term: Lectures three hours a week.

Geography 45.361*

East Europe

An examination of the problems of Eastern Europe emphasizing locational factors, man/land relationships and areal differentiation.

Prerequisites: Third-year standing or permission of the Department.

Day division, Second term: Lectures three hours a week.

Geography 45.370*

Population Geography

Studies of the distributional aspects of population attributes. The areal patterns of population characteristics and their spatial variations associated with differences in the nature of places are examined. Migratory movements are considered within the framework of spatial models of interactions between locations.

Prerequisite: Geography 45.230* or 45.220* or permission of the Department.

Day division, First term: Lectures three hours a week.

D. Bennett

Geography 45.374

Local Government Law

Offered as Law 51.374.

Geography 45.380*

Developing Nations of Asia

An analysis of the physical and human resources of selected regions. Special emphasis is placed on rural development.

Prerequisite: Third-year standing or permission of the Department.

Not offered 1980-81.

Geography 45.395*

Selected World Regional Problems

Geographical analysis of topical problem areas in the world community. Area under consideration in 1980-81: to be announced.

Prerequisite: Third-year standing or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

Geography 45.398*

Research Methods and Design

Approaches to research problems in geography; identification of a research topic, research design including geographic data acquisition and analysis. Students are given the opportunity to design and evaluate research proposals. Required for Geography Honours students.

Prerequisite: Third-year Honours standing in Geography or permission of the Honours supervisor.

Day division, Second term: Lectures and discussion three hours a week.

D. Bennett

Geography 45.399*

Field Studies

Field observation and methodology in a selected region; individual or group basis.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Geography 45.401*

Problems in Human Geography

A course designed to permit a student to pursue his interests in a selected field of human geography. The student prepares papers for discussion with the tutor.

Prerequisites: Final-year Honours standing and permission of the Department.

Day division, First or Second term: Hours arranged.

Geography 45.402*

Problems in Physical Geography

A course designed to permit a student to pursue his interests in a selected field of physical geography. The student prepares papers as the basis for discussion with the tutor.

Prerequisites: Final-year Honours standing and permission of the Department.

Day division, First or Second term: Hours arranged.

Geography 45.403*

Remote Sensing of the Environment

The recording of earth features from suborbital and orbital altitudes and applications to the study of natural and man-made environments. Interpretation and geometry of the air photo; technical aspects include the electro-magnetic spectrum, active and passive sensors, sensor platforms, and visual and digital image analysis; practical applications are explored in such areas as agriculture, forestry, corridor mapping, hydrology, urban analysis and regional planning, and northern environments.

Prerequisite: Geography 45.202* or permission of the Department.

Evening division, First term: Lectures two hours a week, laboratory two hours a week.

R. Ryerson

Geography 45.411*

Quaternary Geography

Changes in the physical environment of the Earth during and subsequent to the last ice age. (Also listed as Geology 67.415*.)

Prerequisites: Geography 45.308 and 45.345*, or 45.346* or permission of the Department.

Not offered 1980-81.

Geography 45.412*

Terrain Analysis

Statistical techniques of morphometric and spatial analysis; applications in geomorphology and geography.

Prerequisites: Geography 45.201*, or a course in statistical methods and permission of the Department.

Evening division, Second term: Lectures three hours a week.

Geography 45.414*

Microclimatology

Prerequisite: Geography 45.345* or 45.346* or permission of the Department.

Not offered 1980-81.

Geography 45.415*

Slope Development: Forms, Processes and Stability

The various forms of sloping ground, their origin and present behaviour in relation to environment and materials. Landslides, mudflows, creep, soil erosion; criteria for relative stability.

Prerequisite: Geography 45.308 or permission of the Department.

Day division, First term: Lectures, laboratory and field studies three hours a week.

P.J. Williams

Geography 45.417*

Glacial Geomorphology

Analysis and significance of glacial landforms and environments.

Prerequisites: Geography 45.312 or permission of the Department.

Day division, First term: Lectures three hours a week.

J.P. Johnson, Jr.

Geography 45.418*

Selected Topics in Physical Geography

A course focusing on selected topics in Physical Geography. Topics for 1980-81: periglacial phenomena, the effects of freezing and thawing on soils, and related issues.

Prerequisites: Fourth-year standing and permission of the Department.

Day division, Second term: Lectures/laboratory three hours a week.

P.J. Williams

Geography 45.421*

Selected Themes in Urban Geography

A seminar developed on selected themes, introduced in Geography 45.320*, or 45.321*, for example, perception and consumer behaviour in shopping, planning concepts and development; application in the specific context of Ottawa.

Prerequisites: Geography 45.320* or permission of the Department; Geography 45.321* recommended.

Evening division, First term: Seminar three hours a week.

J.E. Tunbridge

Geography 45.422*

Selected Themes in Social Geography

Themes alternate between medical geography and the geography of social well-being. The focus for 1980-81 is the geography of social well-being. Describes and explains spatial variations and correlations of social indicators. Examines the extent to which locational and spatial arrangements influence the equality, justice or fairness of access to life-chances.

Prerequisite: Geography 45.303* or permission of the Department.

Day division, Second term: Seminar/lectures three hours a week.

D. Bennett

Geography 45.424*

Soil Mechanics

Offered as Engineering 82.424*.

Geography 45.431*

Advanced Cultural Geography

Cross-cultural thematic examination of territorial organization, territoriality, mental maps, geographies of the mind, and landscape impact of authority and ideology. Regional foci will be principally Canada and Africa.

Prerequisite: Geography 45.230* or permission of the Department; Geography 45.231* recommended.

Evening division, First term: Seminar three hours a week.

Geography 45.433*

Urban Planning

Offered as Engineering 82.333*.

Geography 45.434*

Transportation

Offered as Engineering 82.434*.

Geography 45.435*

Historical Geography

The relation of geography and history, the use of field techniques, primary documents, model building and statistical methods in historical geography. Emphasis is given to local studies.

Prerequisites: Geography 45.335 or permission of the Department.

Day division, Second term: Lectures three hours a week.

Geography 45.440* (part 45.440)

Advanced Political Geography

Systematic concepts in political geography are applied to the analysis of specific contemporary regional problems, territorial conflicts and case studies such as European integration, the Middle East and Southern African conflicts, and the management of the world's oceans.

Prerequisite: Geography 45.337* or permission of the Department.

Day division, Second term: Lectures three hours a week.

Geography 45.442*

Transportation Geography

Geographical appraisal of transportation systems in relation to their physical, social, and economic milieu. The role of transport in industrial location, regional development and trade patterns; problems of urban transport and Canadian transportation policy issues. (Also listed as Engineering 82.435*.)

Prerequisites: Geography 45.220* and 45.340 or permission of the Department.

Day division, First term: Lectures and seminars three hours a week.

I. Wallace

Geography 45.443*

Issues in Applied Economic Geography

A problem-oriented course in the field of economic geography. Topics are drawn from a variety of areas of concern, such as agriculture, resource development, manufacturing and trade.

Prerequisites: Geography 45.220* and 45.340 or permission of the Department; Geography 45.221* recommended.

Day division, First term: Lectures and seminars three hours a week.

Geography 45.445*

Land Resource Use

This course examines, from both theoretical and empirical approaches, the nature and problems of man's use of land resources. The emphasis is on the processes, the impacts of urbanization on rural land patterns and on contemporary methods of land evaluation and classification.

Prerequisite: Geography 45.333* or permission of the Department.

Day division, Second term: Lectures/seminars three hours a week.

Geography 45.490*

Development of Geographic Thought and Methodology

The development of ideas and methods in geography. An examination and discussion of original works. Recommended for Honours students.

Prerequisite: Fourth-year standing or permission of the Department.

Not offered 1980-81.

Geography 45.496

Honours Research Project

Candidates for B.Sc. with Honours in Geography undertake a research project based on a laboratory or field problem. The project is supervised by a member of the Department and a written report must be submitted. The candidate may be examined orally on the report.

Prerequisites: Fourth-year standing in the Geography B.Sc. Honours program.

Day division: Hours arranged.

Supervisor of B.Sc. Honours Studies (co-ordinator) and members of the Department

Geography 45.498

Honours Research Essay

A student in the final year of Honours in Geography (or Combined Honours) must write an Honours essay or equivalent. The essay counts as the equivalent of one full-course credit. Students work under an individual faculty adviser. The subject for research is decided upon in consultation with the Supervisor.

Prerequisite: Fourth-year Honours standing and permission of the Department.

Day division: Hours to be arranged with faculty adviser.

Supervisor of Honours Studies (co-ordinator) and members of the Department

Department of German

Officers of Instruction

Chairman

Jutta Goheen

Professor

E.M. Oppenheimer

Associate Professors

Joseph B. Dallett

Jutta Goheen

Robert Gould

Basil Mogridge

Sessional Lecturers

Jocelyne Béland-Stephenson

Brigitta Fernandez

Annegrete Koch

Gurkiran Mann

Patrick Woodsworth

General Information

German language and literature can be seen in various ways: in their historical dimension, with all the wealth of cultural context that that implies; as the subject matter of more theoretical frames of reference such as linguistics or aesthetics; and as contemporary means of communication and illumination. These three approaches all play a part in German studies at Carleton.

The Department's offerings range from German for beginners (one-credit or two-credit) up to the M.A. program. One can take a single German course, or a sequence, or a whole program (Major or Honours). In the latter case students often find that to have a twofold specialization (i.e. to take a Combined Major or Combined Honours) suits them. It is also possible, while to some extent specializing in German, to take a sequence of two or three courses in another field, such as Economics, or Computer Science, or another language.

The combinations are many and various, and the Department accommodates both those whose prime objective is practical command of the language (as taught in a university context) and those who wish to study an unusually rich literature.

A number of the Department's courses are taught wholly or partly in German; students may contact the Department to discover the language of instruction in a particular course. In general, it is helpful to both parties if students who, after reading the course descriptions, are in doubt as to which course to take, consult the Department before registration week.

Intensive Introductory German

Students considering beginning the study of German at Carleton should take particular note of German 22.120, Intensive Introductory German (two credits). This course is designed to enable students to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.150.

Undergraduate Programs

There are four alternative undergraduate programs, all of which normally include the following core in German:

1. 22.150 Intermediate German A;
or 22.151 Intermediate German B;
or 22.120 Intensive Introductory German;
2. 22.201* Spoken German;
22.202* Written German;
3. 22.250 German Literature of the Eighteenth Century.

To that core students during their program, and in consultation with the Department, add a number of options from German 22.212*, 22.280, and higher courses. The number of these options to be added to the core varies according to the program.

Single Major

Core plus three courses (or equivalent including half courses), at least one of them at the 300 level; i.e. six in all.

Combined Major

Core plus two courses (or equivalent including half courses), at least one of them at the 300 level; i.e. five in all.

Single Honours

Core plus six courses (or equivalent including half courses), at least one of them at the 400 level; i.e. nine in all.

Combined Honours

Core plus four courses (or equivalent including half courses), at least one of them at the 400 level; i.e. seven in all.

Students with an advanced knowledge of German will select a suitable course program in consultation with the chairman of the Department.

Combined Majors Programs

Combined Majors are possible with a number of other subjects, among them Art History, Music, History,

Philosophy, Political Science, Religion, Linguistics, Latin, English, French, Spanish, Italian, and Russian. Early consultation with the departments concerned is advised.

Combined Honours Programs

Combined Honours are possible with a variety of subjects. Among the possibilities are German with Art History, Economics, English, French, Geography, History, Italian, Latin, Linguistics, Mathematics, Music, Philosophy, Political Science, Psychology, Russian, or Spanish. Early consultation with the departments concerned is strongly advised. All Honours programs, including combined ones, are designed to serve, where required, as a basis for further work in German at the graduate level.

Related Courses

In various departments of the University, courses are offered on other aspects of the German-speaking area; these courses cover the past and the present, and include a wide variety of topics in the humanities and social sciences. Students considering a Major or Honours degree in German should not overlook the opportunities present in the University which enable them to add, if they so wish, these additional dimensions to their studies. Conversely, students in disciplines other than German who have a particular interest in Europe and its languages should be aware of the availability to them of the German Department's courses.

Graduate Program

The Department of German offers studies leading to the degree of Master of Arts. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

German 22.115

Introductory German

A beginners' course designed to give a sound grasp of the fundamentals of present-day German. (The facilities of the language learning resource centre are open to students. Guidance in the reading of scientific and scholarly papers can also be arranged.)

Day and Evening divisions: Four hours a week.

J. Goheen, E.M. Oppenheimer and members of the Department

German 22.120

Intensive Introductory German (two credits)

An intensive course designed to enable students with little or no previous knowledge of German to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.150. The course thus provides a basis for majoring in German, but enrolment is not restricted to intending Majors. Students not making satisfactory progress will be transferred to the regular introductory course, German 22.115.

Prerequisite: Permission of the Department.

Day division: Six hours a week.

Joseph B. Dallett, Basil Mogridge

German 22.150

Intermediate German A

Using a number of teaching methods, the course takes students from successful completion of the elementary course to a stage where they are able to express themselves with greater ease in a variety of situations. Material for the course is drawn from several sources, including the press and excerpts from radio programs, and is directed above all towards improved oral competence without, however, neglecting the skills of reading and writing. The course also includes a period during which students choose a topic or area of activity of particular interest, such as politics, travel, university life, and under the supervision of the instructor develop the vocabulary and skills in order to possess a greater linguistic competence in the selected area.

Prerequisite: Grade 11 or 12, German 22.115, or equivalent.

Day and Evening divisions: Four hours a week.

Joseph B. Dallett, Robert Gould

German 22.151

Intermediate German B

This course pursues objectives similar to those of German 22.150 and is designed for students who enter it with a higher than average standing on the elementary level, or with several years of High School or equivalent background. Grammar work and texts are appropriately adapted to this group which is likely to include declared or prospective Majors.

Prerequisite: Good standing in German 22.115 or equivalent.

Day division: Four hours a week.

E.M. Oppenheimer

German 22.201*

Spoken German

Work in small groups with special emphasis on comprehension and self-expression in everyday spoken German.

Prerequisite: German 22.120, 22.150 or 22.151 or permission. (This course is not open to native speakers of German.)

Evening division, First term, Day division, Second term: Three hours a week.

Joseph B. Dallett and members of the Department

German 22.202*

Written German

A course parallel to German 22.201*, and emphasizing comprehension and self-expression in written German, by such means as essay-writing and translation into and from German.

Prerequisite: German 22.120, 22.150 or 22.151, or permission of the Department.

Evening division, First term: Three hours a week.

Robert Gould

German 22.212*

Descriptive Analysis of Present-day German

An explication of German sentence structure in the light of current linguistic theories. Text analysis and some practice in writing.

Prerequisite: German 22.120, 22.150 or 22.151, and Linguistics 29.100 or permission of the Department.

Day division, Second term: Three hours a week.

Jutta Goheen

German 22.230

Austrian Culture and History

This course, designed for students who do not have German, considers the forces shaping events in the period from the 1790's to the 1970's, along with works of literature selected for their aesthetic interest and for the light they shed on Austrian society. One major focus is the flowering which derived from the decline and fall of the Habsburg Empire; another is the resurgence of Austrian literature in recent years. Texts are in English translation, and students specializing in German, though they may take the course, are not able to count it towards the Department's requirements for a Major or Honours in German.

Prerequisite: Second-year status or permission of the Department.

Not offered 1980-81.

German 22.250

German Literature of the Eighteenth Century

The literature of the Enlightenment, Storm and Stress, and Early Classicism, with special emphasis on the works of Lessing, Goethe and Schiller.

Prerequisite: German 22.120, 22.150 or 22.151 or permission of the Department.

Texts: Lessing, *Minna von Barnhelm*; Schiller, *Kabale und Liebe*; Wieland, *Musarion*; Goethe, *Werther*, *Iphigenie*, *Faust I*, *Gedichte*.

Evening division: Three hours a week.

Robert Gould

German 22.280

German Literature of the Twentieth Century

Representative texts from drama, poetry, and prose fiction, in the period from Hauptmann to Grass.

Prerequisite: German 22.120, 22.150 or 22.151 or permission of the Department.

Not offered 1980-81.

German 22.301*

Advanced Spoken German

Practice of oral comprehension and spoken German in discussions, short presentations and casual talks; based on material (films and texts) illustrating concerns of Post-War Germany.

Prerequisite: German 22.201* or 22.202* or permission of the Department.

Day division, Second term: Three hours a week.

Jutta Goheen

German 22.302*

Advanced Written German

An advanced course focussed on the understanding and command of modern written German; translation exercises with both literary and non-literary texts.

Prerequisite: German 22.202* or 22.212* or permission of the Department.

Evening division, Second term: Three hours a week.

Basil Mogridge

German 22.312

Linguistic Stylistics

Linguistic structures and literary style: sound patterns (Rilke), time and tenses (Thomas Mann), spatial prepositions (Eichendorff), aspects of syntactic structure (Grass), semantic analysis of metaphor (Kafka).

Prerequisite: German 22.202* or 22.212* or permission of the Department.

Not offered 1980-81.

German 22.350*

Aspects of German Literature 1700-1950

Selected aspects of the literature of the period from the early eighteenth century to the mid-twentieth century, chosen in such a way that some part of the nineteenth century is always included.

Prerequisite: German 22.250 or permission of the Department.

Not offered 1980-81.

German 22.380

Twentieth Century Studies (Literary and Linguistic)

Topic in 1980-81: Drama since the 1920's. Developments in drama in the German-speaking countries since *Baal* and *Die Dreigroschenoper*. Playwrights include Brecht, Horváth, Frisch, Dürrenmatt, Hacks, and Handke, among others.

Prerequisite: German 22.202* or 22.212* or 22.250 or 22.280 or permission of the Department.

Day division: Three hours a week.

Basil Mogridge

German 22.401*

Formal German Speech (Die deutsche Rede)

A study of the tradition of formal German speech, and practice in oral presentation (Vortrag).

Prerequisite: German 22.301* or 22.312 or permission of the Department.

Evening division, First term: Three hours a week.

Jutta Goheen

German 22.412

History of the German Language

Significant stages in the development of German: The evolution of its phonetic and grammatical structure, its vocabulary and stylistic norms. The social role of language of the twentieth century: language as a means of manipulation (Nazi Germany; advertising), divided German (FRG and GDR); socio-linguistic facets of contemporary literary language.

Prerequisite: One of German 22.212*, 22.312, 22.330*, 22.430 or permission of the Department.

Not offered 1980-81.

German 22.430

Medieval Language and Literature

Introduction to Medieval German; Medieval narrative style in heroic epic poetry (*Nibelungenlied*) and early vernacular love poetry (*Minnesang*).

Prerequisite: German 22.250 or permission of the Department.

Not offered 1980-81.

German 22.440*

Humanism, Reformation, Baroque

Topic for 1980-81: Poetry and drama in the age of the Baroque. Characteristic themes and expressive modalities in a selection of works ranging from the epigram and sonnet through the heroic epistle and love lyric to the *Redeatorium* and school play (both tragic and comic).

Prerequisite: German 22.250 or permission of the Department.

Day division, First term: Three hours a week.

Joseph B. Dallett

German 22.450

Goethe

Topic in 1980-81: A detailed study of *Faust*; complementary selections from other writings by Goethe.

Prerequisite: German 22.250 or permission of the Department.

Evening division, Second term: Three hours a week.

E.M. Oppenheimer

German 22.470

Seminar on a Literary or Linguistic Topic

Topic for 1980-81: Nineteenth century literature. Social and individual problems in town and country during the nineteenth century. The course considers some of the changes and tensions in the political, social and economic life of the nineteenth century as they are reflected in the drama, prose and verse of the period. Works by Büchner, Hauptmann, Fontane, Keller, Droste, writers of the "Junges Deutschland" group, Grillparzer and others.

Day division: Three hours a week.

Robert Gould

German 22.471*

Seminar on a Selected Topic

Romantic prose: Examples of the romantic novel and short story from Friedrich Schlegel to Eichendorff; the prose narrative as a vehicle for the propagation of the new ways of thinking and feeling of the period; experimental and traditional structures; the use of verse in romantic prose.

Prerequisite: Permission of the Department.

Not offered 1980-81.

German 22.471*

Seminar on a Selected Topic

The short story as a twentieth-century paradigm.

Prerequisite: Permission of the Department.

Not offered 1980-81.

German 22.490*

Tutorial on a Selected Topic

Primarily for Honours students in their final year. A genre, an author or a group of authors is selected; methods of literary criticism are considered.

German 22.491

Tutorial

As above, but offered for full-course credit with a corresponding enlargement of scope and assignments.

German 22.499

Honours Essay

An option for final-year Honours students.

Graduate Courses Open to Undergraduate Students

The attention of Honours students is drawn to the courses offered by the Comparative Literature Committee; and to the following 500 level courses offered in the M.A. program of the Department of German.

German

22.546W1 Genres in German Literature

22.547F1 Genres in German Literature

22.566W1 Period Studies

22.572F1 Individual Authors

Officers of Instruction

Chairman

John W. Strong

Professor Emeritus

R.G. Glover

Professors

J.G. Bellamy

Desmond G. Bowen

G. Peter Browne

David Chung

Gordon S. Couse

R.C. Elwood

David M.L. Farr

Naomi E.S. Griffiths

J.K. Johnson

H.A. MacDougall

S.R. Mealing

Paul C. Merkley

H. Blair Neatby

John W. Strong

Michael J. Sydenham

S.F. Wise

Associate Professors

Marilyn J. Barber

B. Carman Bickerton

J.L. Black

R.T. Clippingdale

J. Nicoll Cooper

E. Peter Fitzgerald

Robert B. Goheen

Deborah Gorham

J. Greatrex

F.J.K. Griezic

R.A. Jones

Edward R. Kantowicz

Peter J. King

D.A. Muise

Mark Phillips

Assistant Professors

G.F. Goodwin

John LaGrand

John H. Taylor

Adjunct Professors

N. Hillmer

Fernand Ouellet

R.E. Reynolds

Programs of Study

All students who elect History as a Major or Honours subject, or who undertake graduate work in History, will plan the whole of their program in consultation with a departmental program adviser whose approval is necessary each year before registration is complete. Departmental advisers for students in History programs are:

Major students, G.F. Goodwin, E.R. Kantowicz

Honours students, J.N. Cooper, P.C. Merkley

Graduate students, R.C. Elwood, J.K. Johnson

Major Programs

Major in History

1. Students majoring in History are to take a minimum of six History courses, as follows:

(a) One 100-level course, to be taken in the First year;

(b) At least two 200-level courses, to be completed by the end of the Second year. A third 200-level course is usually recommended;

(c) At least two 300-level courses, to be taken in the Third year. The Department may permit a third 300-level course in lieu of a third 200-level course.

2. Of the six courses required (at the 100, 200 and 300 levels) either at least one from each field or two from each of two fields shall be taken. The fields are:

(a) medieval and early modern Europe

(b) modern Europe

(c) North America

In order to continue in the Major program, a student must attain a grade of C- or better in a First-year History course and must maintain at least a C- average over all History courses taken.

Combined Majors

For Major programs combining History with another subject, the general rule is that they must include at least four courses in History, no more than one of these four at the 100 level and at least one of them at the 300 level.

Honours Programs

Honours in History

1. The Honours program requires at least ten or eleven courses in History, as follows:

(a) One 100-level course, to be taken as part of the First year;

(b) Two 200-level courses, to be taken in the Second year;

(c) Three 300-level courses, to be taken in the Third year and to include History 24.388;

(d) Four or five 400-level courses, to be taken in the Fourth year and to include History 24.490 (Honours Comprehensive) and History 24.491 (Directed Studies).

2. Honours students in the Fourth year will take five courses altogether, all at the 400 level, one of which may be outside the Department.

Normally, not more than two 400-level History seminars may be taken in any one of the following five areas:

(a) medieval and early modern Europe (b) modern western Europe (c) Russia and eastern Europe (d) Great Britain and the Commonwealth (e) North America. A student may elect to present a research essay (History 24.499) in place of any two other 400-level courses except History 24.490 and History 24.491.

Students will be required to show a proficient reading knowledge of French. Students may substitute another language with the permission of the Department if it is more appropriate to their program.

Students intending to enter the Honours program are advised to do so as early as their intentions are settled, and not later than the beginning of the Third year. All students who meet the general University Honours requirements, and who have a grade-point average of at least 6.0 in History, will be admitted to, and permitted to continue in the Honours program.

Other applicants will be given individual consideration on application to the Department. Honours students must have their program approved at registration by a departmental adviser. Honours students in good standing, whose course patterns meet the regulations in *Major in History*, paragraph 2, may revert to the Major program with a B.A. at the end of the Third year. Students who have not taken History 24.388 in their Third year will require the permission of the Department to enter the Fourth year. In determining the class of an Honours candidate's degree, the Department will average the grades on all History courses, those on the 400-level courses being given double weight.

There is no limit to the number of qualified students admitted to the Fourth year of the Honours program; however, allocation of students among the 400-level seminars will be determined by the Department after consultation with individual students. For details consult the Honours adviser. This regulation will not be applied in such a way as to limit a student's opportunity to complete requirements prescribed for a degree in History.

Combined Honours Programs

Students combining History with another subject will be expected to meet the language requirement of the Department (see foregoing, *Honours in History*), and to complete at least six courses in History. Only one of these six courses may be taken at the 100 level. The program must include two History courses at the 400 level, one of which must be a seminar.

Cross-Listed Courses

The History Department cross-lists several courses offered by other departments (e.g. several classical civilization courses in the Department of Classics). No more than two such cross-listed courses may be included in the six courses required for the Major program or the four courses required in Combined Majors. No more than three cross-listed courses may be included in an Honours or Combined Honours program.

Prerequisites

Unless otherwise stated, the prerequisite for any 300-level course is:

1. A 200-level course, preferably in an appropriate field (for fields, see *Major in History*, paragraph 2); or
2. Permission of the Department.

The prerequisite for any 400-level course is:

1. Two 300-level courses with one course at either the Second- or Third-year level in an appropriate field; or
2. Permission of the Department.

Courses Offered

Note: Students who elect History as their Major or Honours subjects are required to take either History 24.105 or 24.112 or 24.113 or 24.114.

History 24.105

Western Europe in the Middle Ages

A survey of the development of Western civilization from the decline of the Roman Empire until the Renaissance.

Day division: Three hours a week.

J.G. Bellamy, J. Greatrex, J.J. LaGrand

History 24.112

The Rise of Modern Europe

This course surveys European history from the fifteenth to the early twentieth century. Major items include the urban environment of the Renaissance, the expansion of Europe, the organization of state power, revolution, nationalism versus internationalism.

Day division: Three hours a week.

H.A. MacDougall (co-ordinator), G.S. Couse, R.B. Goheen, M. Phillips

History 24.113

Europe in the Modern World

An introduction to world history which focuses on the development of Europe and its overseas offshoots from the eighteenth century to the present. Different sections of this course can be expected to reflect

different emphases and approaches. Section outlines and reading lists will be available before registration.

Evening division: Three hours a week.

E.P. Fitzgerald

History 24.114

Origins of American Societies

A topical analysis of the development of selected *Canadien*, English American, and Latin American societies from their European origins to the end of the eighteenth century.

Day and Evening divisions: Three hours a week.

B.C. Bickerton, P.J. King, S.R. Mealing

History 24.205

England during the Middle Ages

A study concentrating on the political development of medieval England and her French possessions, A.D. 1066-1485.

Not offered 1980-81.

History 24.207

Social and Economic History of the Middle Ages

A study of the economic development and social history of medieval Europe. Topics include the commercial revolution, feudalism, chivalry, and the crusades.

Day division: Three hours a week.

J.J. LaGrand

History 24.210 (24.310)

Introduction to the History of Ideas

A study of western intellectual development since the Renaissance which considers such movements as humanism, the Enlightenment, romanticism, Darwinism and contemporary ideologies.

Day division: Three hours a week.

D.G. Bowen

History 24.215

Renaissance Europe

The political and cultural history of Europe in the fourteenth, fifteenth and sixteenth centuries, with emphasis on the Italian Renaissance and its diffusion into England and France.

Day division: Three hours a week.

M. Phillips

History 24.220

Europe in the Era of the World Wars

A history of Europe from the turn of the century to 1950 which focuses on the impact of the two world wars. Emphasis is placed on war as an agent of economic and social change, although traditional themes such as domestic politics, ideological conflict and international relations are included.

Not offered 1980-81.

History 24.222

East Asian Civilization

Basic characteristics of traditional East Asian civilization in China, Korea and Japan. Main patterns of the

Asian responses which emerged under the impact of the expanding West at the dawn of modern Asia from the seventeenth century to the early nineteenth century.

Day division: Three hours a week.

D. Chung

History 24.224

The Revolutionary Tradition in Europe, 1789-1900

Beginning with the French Revolution of 1789 the course includes such significant movements as romanticism, nationalism, the rise and implications of industrialism, and the development of socialist theory culminating in Marxism.

Evening division: Three hours a week.

H.A. MacDougall

History 24.230

Canada from 1763

The political, economic and social development of the British North American colonies of 1763 to the Canada of today. Recommended as the introductory course in Canadian history for Majors and Honours History students. Credit will not be granted for both History 24.230 and 24.231.

Day division: Three hours a week.

D.A. Muise, M.J. Barber

History 24.231

Historical Introduction to Modern Canada

A study of the political, economic and social development of modern Canada. The course provides a survey of Canadian history since 1760, but the emphasis is on the developments in the twentieth century. Recommended for students who are not majoring in History. Credit will not be granted for both History 24.230 and 24.231.

Day and Evening divisions: Three hours a week.

F.J.K. Griezic, J.K. Johnson, H.B. Neatby, J.H. Taylor

History 24.235

Colonial Frontier Societies

An examination of four or five frontier societies in the eighteenth and nineteenth centuries, most of them Canadian, in which the presence of either European or North American metropolitan influences were critical to the character of development.

Day division: Three hours a week.

B.C. Bickerton

History 24.240

History of the United States of America

A survey of United States politics and society since the American Revolution.

Day division: Three hours a week.

G.F. Goodwin, E.R. Kantowicz

History 24.250

Modern England, 1460-1960

A survey of significant political and social developments in England from the mid-fifteenth to the mid-twentieth century.

Day division: Three hours a week.

R.B. Goheen, D. Gorham

History 24.256

The Comparative Approach to European History

An introduction to the comparative study of political and social developments in Western Europe. The primary focus is on Great Britain and France from the seventeenth to the nineteenth century, but other countries are considered as well.

Evening division: Three hours a week.

J.N. Cooper

History 24.260

History of Russia and the U.S.S.R.

A survey of Russian history from Kiev to the present, with emphasis on the period from the reign of Peter the Great to the Revolution of 1917.

Day division: Three hours a week.

R.C. Elwood

History 24.275

History of Africa

An introduction to the history of Africa. The first half is devoted to the period prior to European colonization with emphasis on West African states and empires; the second half deals with resistance to colonization, European colonial rule, independence and liberation movements.

Not offered 1980-81.

History 24.278

The Middle East: 1798 to the Present

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on the mutual discovery of East and West, the search for identity, the impact of colonialism and international rivalry, and social, religious and cultural change within a continuing tradition. (Also listed as Religion 34.278.)

Day division: Three hours a week.

E. Rothman

History 24.280

The Diplomatic History of Europe, 1815-1914

A survey of diplomatic history from the Congress of Vienna to the outbreak of the First World War.

Day division: Three hours a week.

R.A. Jones

History 24.290

History of Ancient Greece: The Classical Period.

Offered in the Department of Classics as Classical Civilization 13.290.

History 24.291

History of Ancient Rome: Late Republic — Early Empire 133 B.C.-96 A.D.

Offered in the Department of Classics as Classical Civilization 13.291.

History 24.301

The Hellenistic Age 323-31 B.C.

Offered in the Department of Classics as Classical Civilization 13.301.

Not offered 1980-81.

History 24.302

Late Roman History: Fourth and Fifth Centuries A.D.

Offered in the Department of Classics as Classical Civilization 13.302.

Not offered 1980-81.

History 24.303

History of the Byzantine Empire, 527-1453 A.D.

Offered in the Department of Classics as Classical Civilization 13.303.

History 24.304

Women in Antiquity

Offered in the Department of Classics as Classical Civilization 13.344.

History 24.305

Cultural and Intellectual History of the Middle Ages

An examination of western European cultural development from the patristic age to the fifteenth century. Consideration is given to literature, theology, education, and political and social thought. Readings in primary and secondary sources. (Also listed as Religion 34.305.)

Not offered 1980-81.

History 24.306*

The Crusades

An examination of the origins, survival, and effects of crusading from the eleventh to the thirteenth century. Special attention is given to the religious and social developments in Europe which produced or were influenced by the crusading idea.

Not offered 1980-81.

History 24.307*

Medieval France

A study of the political and religious history of France during the Middle Ages.

Day division, First term: Three hours a week.

J. Greatrex

History 24.308*

Cathedral and Town

A study of urban life in England during the later Middle Ages.

Day division, First term: Three hours a week.

J. Greatrex

History 24.309*

Medieval Germany

A study of the political and religious history of the Holy Roman Empire during the Middle Ages.

Not offered 1980-81.

History 24.312*

The Italian Renaissance

Studies in political, social and intellectual history, concentrating on Florence and Venice. Readings are in both primary and secondary works. Some representative themes are: a comparative history of Florence and Venice; utopian literature; revivals of antiquity.

Evening division, First term: Three hours a week.

M. Phillips

History 24.313*

Historical Writing and Political Thought in Renaissance and Reformation Europe

This course examines a series of political and historical thinkers in relation to early modern society. Representative figures include Marsilius, Machiavelli, Guicciardini, Botero, Bodin, Campanella.

Evening division, Second term: Three hours a week.

M. Phillips

History 24.315

European Economic History

Offered in the Department of Economics as Economics 43.315.

History 24.316*

The French Revolution

A study of the origins, course and immediate consequences of the transformation of Old France into a modern nation. After some consideration of the causes of the Revolution, particular attention is given to the evolution in theory and practice of revolutionary democracy and nationalism, these being considered in relation to local, national, and international events.

Day division, Second term: Three hours a week.

M.J. Sydenham

History 24.317*

Twentieth-Century France

A study of France and of French foreign and colonial policy from the turn of the century to the present day, with emphasis on the Gaullist period. Themes and topics include the Dreyfus Affair, the republican synthesis and its breakdown, the collapse of 1940 and the Vichy regime, the post-war colonial crises, the establishment and evolution of the Fifth Republic.

Not offered 1980-81.

History 24.318*

Twentieth-Century Germany

A study of Germany and the "German problem" in Europe from the turn of the century to the present day, with emphasis on the Nazi period. Themes and topics include the force of nationalism, the survival of authoritarian institutions and the failure of democracy, the

rise of Hitler and the impact of the Nazi regime, the Second World War, and the evolution of divided Germany in post-war Europe.

Not offered 1980-81.

History 24.321* (24.218)

The Enlightenment

A study in eighteenth-century western European thought as manifested by the arts and letters. Particular attention is given to the French *philosophes*.

Day division, First term: Three hours a week.

G.S. Couse

History 24.322* (24.219*)

The Counter-Enlightenment

A study of a complex of intellectual movements — romanticism, conservatism, historicism, religious revival, and idealism — that ran counter to the Enlightenment in western Europe between about 1750 and 1850.

Prerequisite: History 24.321* or permission of the Department.

Day division, Second term: Three hours a week.

G.S. Couse

History 24.323

Religion and the State, Europe 1815-1965

A study of selected problems in modern religious history from the end of the French Revolution to Vatican Council II. Areas to be represented include the rise and decline of liberal Catholicism, the Oxford movement, Christian Socialism, Bismarck and the churches, the growth of anti-Semitism, Zionism, Vatican Council II.

Day division: Three hours a week.

H.A. MacDougall

History 24.325

The Economic Development of Canada

Offered in the Department of Economics as Economics 43.325.

History 24.326*

Canada Before and After the Conquest

An examination of *Canadien* society from 1730 to 1774.

Day division, First term: Three hours a week.

B.C. Bickerton

History 24.327*

Introduction to Local History

An examination of the methods and approaches that characterize recent British, French, and North American writing on local history.

Not offered 1980-81.

History 24.328*

Eastern Ontario Communities

The local history of Eastern Ontario, with particular reference to the settlement and development of the Ottawa Valley in the nineteenth century.

Prerequisite: History 24.327* or permission of the Department.

Not offered 1980-81.

History 24.329*

Canadian Urban History

An introduction to urban growth and development in Canada. The course considers the historical basis of the urban pattern and its influence in Canada, and the internal structure and institutions of Canadian cities. In particular, Ottawa is used as a case study for classroom and research purposes.

Day division, Second term: Three hours a week.

J.H. Taylor

History 24.330*

Social History of Canada

Studies in the structure and values of Canadian societies from the eighteenth to the early twentieth centuries.

Day division, First term: Three hours a week.

S.R. Mealing

History 24.331*

French Canada since Confederation

A political and intellectual history of French Canada with emphasis on the development of French Canadian nationalism. Students are expected to read both French and English sources.

Day division, Second term: Three hours a week.

H.B. Neatby

History 24.332*

The Maritime Provinces 1750-1900

The social, religious, ethnic and economic background of the politics of the Maritime Provinces.

Day division, Second term: Three hours a week.

D.A. Muise

History 24.333*

Upper Canada and Ontario

An introduction to the economic, social, and political development of Upper Canada and Ontario in the eighteenth and nineteenth centuries.

Day division, Second term: Three hours a week.

J.K. Johnson

History 24.334

Canada-United States Relations

An examination of Canadian-American relations in the political, diplomatic and economic fields, with particular attention to the relationship in the twentieth century. Not offered 1980-81.

History 24.335*

Canadian Farm and Labour Movements since Confederation

A study of the organized responses to agrarian and industrial discontent.

Day division, First term: Three hours a week.

F.J.K. Griezic

History 24.336*

Canadian External Relations

The development of Canadian attitudes and policies toward external affairs in the years since 1867, with particular emphasis to the twentieth century.

Day division, First term: Three hours a week.

H.B. Neatby

History 24.337

The Emergence of the Political Tradition in Canada

An examination of Canadian politics (politicians, parties, ideas and social context) from the late eighteenth century to the present. Special emphasis is given to the post-Confederation period.

Day division: Three hours a week.

D.A. Muise, J.H. Taylor

History 24.338*

Canadian Immigration and Settlement

A study of immigration to Canada and of the adaptation of immigrants to their new environment from the beginning of the nineteenth century to the Second World War.

Day division, First term: Three hours a week.

M.J. Barber

History 24.339*

History of Western Canada

An introduction to the economic, social and political evolution of the four westernmost provinces from initial European penetration to the mid-twentieth century. Of special concern are the emergence and nature of western Canadian cultures and their relationships with central Canada.

Day division, Second term: Three hours a week.

F.J.K. Griezic

History 24.341*

The American Revolution

A study of the causes and course of the movement leading to the independence of the United States. Particular emphasis is given to ideology, society, local issues and revolutionary organization.

Day division, First term: Three hours a week.

P.J. King

History 24.343*

The United States in the Twentieth Century, I, to 1940

Some principal themes in the history of the United States from the progressive era to the conclusion of the New Deal era.

Day division, First term: Three hours a week.

P.C. Merkley

History 24.344*

The United States in the Twentieth Century, II, since 1940

Some principal themes in the history of the United States since the New Deal era.

Day division, Second term: Three hours a week.

G.F. Goodwin

History 24.345*

American Urban History

An introduction to the major patterns of urban growth and development in the United States. Particular cities are used as case studies, but an attempt is made to generalize about the functions, shapes, and problems of cities. The major emphasis is on the nineteenth century.

Day division, First term: Three hours a week.

E.R. Kantowicz

History 24.346*

American Immigration and Ethnic Groups

An introduction to the major currents of both urban and rural immigration to the United States and the formation of distinct ethnic groups in American society. The major emphasis is on the period of unrestricted immigration from 1820 to 1921.

Not offered 1980-81.

History 24.347*

The Negro in the United States

A study of the Negro in the United States, which concentrates on his experience under slavery and the recurring themes of integration and separatism after emancipation.

Day division, Second term: Three hours a week.

G.F. Goodwin

History 24.348

American Intellectual History

An examination of American thought from the colonial period to the twentieth century, with emphasis on political, social and religious ideas and their relation to American society and institutions.

Day division: Three hours a week.

P.J. King

History 24.350

Modern British and Canadian Constitutional History

A survey of themes in the constitutional development of Britain since 1688 and Canada since 1763.

Day division: Three hours a week.

G.P. Browne

History 24.354

Women and Society: 1700 to the Present

An examination of the changes that have taken place in the position of women since the eighteenth century and the relationship of these changes to other social, economic, and intellectual developments. The course deals with developments in Canada, Western Europe, and the United States.

Evening division: Three hours a week.

A.J. Barber, D. Gorham

History 24.358

Politics and Society in England circa 1500-1850

An enquiry into the relationship between society and politics in England.

Day division: Three hours a week.

N. Cooper, R.B. Goheen

History 24.360

History of the U.S.S.R.

A history of the politics, diplomacy, culture, and society of Soviet Russia from 1917 to the present.

Day division: Three hours a week.

J.L. Black

History 24.361*

The Russian Empire

The expansion and development of the Russian Empire from the fourteenth century to 1917, with emphasis on Siberia and Central Asia.

Day division, Second term: Three hours a week.

J.W. Strong

History 24.366*

Modern East Central Europe

A study of the political and diplomatic history of East Central Europe since 1848 with emphasis on Poland and Czechoslovakia.

Evening division, First term: Three hours a week.

J.L. Black

History 24.370

The Rise and Fall of the British Empire

The evolution of the British Empire following the American Revolution analysing the forces behind its establishment, emphasizing political, economic and social factors and concluding with its transformation into the modern Commonwealth.

Not offered 1980-81.

History 24.371*

Imperialism, 1852-1914

A study of the expansionist policies pursued by the European powers, and the United States in the second half of the nineteenth century. Several examples of expansion are analyzed as historical case studies in order to test general theories that claim to explain imperialism, in particular those which link it with the development of capitalism.

Day division, First term: Three hours a week.

E.P. Fitzgerald

History 24.372*

Imperialism and Colonialism in North Africa and the Near East, 1798-1962

A study of how, during the nineteenth century, Europe established political, economic, and cultural dominance over the Muslim states of the Mediterranean basin; and how the colonial regimes implanted there subsequently developed and were eventually overthrown. Themes include imperial rivalry and conquest, indigenous collaboration and resistance, nationalism and independence struggles. Emphasis is placed on Algeria.

Day division, Second term: Three hours a week.

E.P. Fitzgerald

History 24.377

The Irish in Modern History: A Problem in Historical Ethnicism

A study of the development of the two peoples of Ireland, Anglo-Irish relations since Elizabethan times, the influence of the diaspora Irish in home affairs, and the contribution of the Irish to developments in England, Canada, the United States and other areas. Particular attention is paid to the problem of religion in Irish affairs.

Evening division: Three hours a week.

D.G. Bowen

History 24.378*

The Reformation Era in European History, 1409-1648

A study of the papacy and the reformed churches, from the Council of Pisa to the Treaty of Westphalia. The radical changes in the relationship between church, state, and society in Western Europe during this period are examined.

Day division, Second term: Three hours a week.

D.G. Bowen

History 24.379*

Christian Churches and the European Expansion Overseas

A study of selected topics examining the relations between the Christian churches and European empires overseas on the continents of Africa, South America, and Asia.

Not offered 1980-81.

History 24.380

International History, 1914-1956

A survey of international history in the First World War; peacemaking 1919-1923; inter-war diplomacy and the origins of the Second World War; the relations of the powers in the Second World War; and post-war relations and the Cold War.

Day division: Three hours a week.

R.A. Jones

History 24.385*

Modern China

A political history of China from the early nineteenth century to the present with emphasis on Chinese reaction to the western impact.

Day division, First term: Three hours a week.

J.W. Strong

History 24.386*

Modern Japan

The political, social and economic development of Japan during the Meiji, Taisho and Showa periods.

Day division, Second term: Three hours a week.

J.W. Strong

History 24.388

Historical Theory and Method

An examination of questions concerning the nature and value of historical enquiry and the meaning of the course of history.

Day division: Three hours a week.

G.S. Couse, P.C. Merkley

History 24.405

Selected Problems in Medieval History

A seminar on one or more of the following topics: crime and criminal law in medieval England, canon law, ecclesio-political theory.

Day division: Three hours a week.

J.G. Bellamy, J.J. LaGrand

History 24.412

Machiavelli and His Age

An intensive examination of Machiavelli's political, historical, military, diplomatic, literary, and personal writings. His life and thought are explored in the context of the political, intellectual, and social issues that confronted Italians in the late Renaissance. Representative topics include: ancient political thought, the Florentine historiographical tradition, the role of the Papacy in Italian politics, the influence of Venice.

Not offered 1980-81.

History 24.416

The French Revolution

A seminar in selected problems in the history and interpretation of the French Revolution, with particular reference to the development of different concepts of democracy.

Evening division: Three hours a week.

M.J. Sydenham

History 24.417

Modern France

A seminar concerned with the political, social and diplomatic history of France since the late nineteenth century.

Not offered 1980-81.

History 24.429

Selected Problems in Greek and Roman History

Special topic for 1980-81 is "The Augustan Principate". Offered in the Department of Classics as Classical Civilization 13.429. Open to Third and Fourth year History students.

R.L. Jeffreys

History 24.432

Seminar on Acadian History, 1604-1967

This seminar examines the establishment of European settlement in "Acadie" or Nova Scotia, the development of Acadian traditions pre and post 1755, including the Acadian reaction to exile, emphasizing community development and Acadian social characteristics to the present day. Considerable emphasis is placed upon the use of documentary material.

Evening division: Three hours a week.

N.E.S. Griffiths

History 24.433

Selected Periods in the History of Twentieth-Century Canada

A seminar on problems arising from the impact on Canadian society of rapid immigration, the two world wars and the great depression.

Day division: Three hours a week.

M.J. Barber

History 24.434

Aspects of Canadian Nationalism, 1867-1918

A seminar on selected topics in the politics and thought of Canadian nationalism in the first half of the post-Confederation period.

Not offered 1980-81.

History 24.435

Confederation

A seminar on the social, political, and economic bases of the Confederation movement, on the achievement of Confederation and on the constitutional problems arising from the British North America Act.

Evening division: Three hours a week.

G.P. Browne

History 24.436

Ontario to 1900

A seminar on the social, economic and political development of Ontario in the eighteenth and nineteenth centuries.

Day division: Three hours a week.

J.K. Johnson

History 24.438

Selected Problems in Canadian Labour History, 1873-1956

A seminar studying the organization of the working class in industrial history.

Day division: Three hours a week.

F.J.K. Griezic

History 24.440

A Selected Period in United States History

A seminar which considers the relationship among the political, social, economic and intellectual aspects of one of the following periods: (a) The early national periods, 1783-1816; (b) the age of Jackson, 1824-46; (c) the progressive era, 1896-1912; (d) the interwar years, 1920-41; (e) Since 1941. For 1980-81 the period will be: (c)

Day division: Three hours a week.

E.R. Kantowicz

History 24.457

Selected Problems in Tudor and Stuart History

A seminar concentrating on aspects of English group and community organization and power in the Tudor and early Stuart period.

Day division: Three hours a week.

R.B. Goheen

History 24.458

Selected Problems in Nineteenth Century British History

A seminar on mid-nineteenth century social reform and its social background.

Not offered 1980-81.

History 24.459

Selected Problems in the History of Women and the Family: from the Industrial Revolution

A seminar on selected problems relating to the changes in women's lives and in the structure of the family that have occurred since the eighteenth century. The course is concerned with one or more of the following issues: women's changing work patterns; the rise of the women's movement; changing attitudes towards childhood; changing views of sexuality. While the main focus is on Britain, North American and European experience is also examined, for comparative purposes.

Day division: Three hours a week.

D. Gorham

History 24.460

Selected Problems in Russian History

A seminar on selected problems relating to the expansion and decline of Imperial Russia.

Day division: Three hours a week.

J.L. Black

History 24.461

Selected Problems in Soviet History

A seminar on selected problems relating to the establishment and subsequent course of the Soviet Union.

Not offered 1980-81.

History 24.470

Selected Problems in Modern Colonial and Imperial History

A seminar concerned with the establishment and evolution of modern colonial empires, formal and informal, since 1763. Concentration is on the British or French empire.

Not offered 1980-81.

History 24.480

Selected Problems in the Diplomacy of the Great Powers, 1906-39

A seminar on selected problems in diplomatic history from the origins of the First World War.

Day division: Three hours a week.

R.A. Jones

History 24.481

Diplomatic and Strategic Problems of the Second World War

A seminar on problems selected from major politico-strategic issues of the outbreak, conduct and aftermath of the Second World War.

Not offered 1980-81.

History 24.490

Honours Comprehensive

Required of candidates for Honours in History, this is a written examination in a special field with general questions relating to historical thought.

Day and Evening divisions.

History 24.491

Directed Studies

A course required of candidates for Honours in History in their Fourth year. It includes supervised reading and reports in an area of history.

Day and Evening divisions.

History 24.499

Honours Research Essay

Open to candidates for Honours in History in their Fourth year with the permission of the Department. B+ standing in History courses is expected. The subject for research is settled in consultation with the Department and a supervisor will be assigned. A written outline of the project must be submitted to the Honours Committee one week before the last day for course changes. The candidate will be orally examined upon the essay after presentation. This course carries double credit.

Day division.

Courses Planned for Evening Division

Each year the History Department offers a wide selection of courses in the Evening division at the 100, 200 and 300 levels which are as representative as possible of the fields required for the B.A. degree. At least three 400 level seminars are also offered annually in the Evening.

Arts and Social Sciences

Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of man and his attempts to understand himself and the world about him.

Prerequisite: First-year standing or higher.

Not offered 1980-81.

Humanities 10.200*

An examination of selected works illustrating various dominant views on the nature of man and his attempts to understand himself and the world about him in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1980-81.

Interdisciplinary 04.288

Introduction to Women's Studies

A survey course, designed to increase the student's understanding of the position of women in contemporary society. Instructors from a variety of disciplines offer an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society.

Evening division: Lectures three hours a week.

Interdisciplinary 04.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature as the paramount expression of the writer's concern with *la condition humaine*. Such themes as alienation, dread, subjectivity, freedom, authenticity, and death are explored in selected works by major authors, including Hölderlin, Leopardi, Kierkegaard, Dostoevsky, Nietzsche, Tolstoy, Rilke, Kafka, Conrad, Hesse, Ionesco, Beckett, Sartre and Camus. Attention is also given to the philosophic basis and literary antecedents of the existentialist posture. (Also listed as English 18.390.) All assigned readings will be in English.

Prerequisite: Permission of the Department.

Day division: Lectures and discussions three hours a week.

S.C. Russell

Science

Science 60.100

Man in His Environment

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. Included is a general description of the aims and methods of experimental science with an emphasis on environmental and ecological problems. The historical aspects of scientific discoveries are examined, particularly those that are influencing present society. Particular attention is directed to the interactions of science and society and to man's influence and impact on the natural environment. In a framework of the natural sciences, emphasis is on the limits of the natural systems in which man is a member.

Day division: Lectures three hours a week.

H.H.J. Nesbitt

Science 60.200*

Introduction to Scientific Computing

Also listed as Computer Science 95.103*. See p. 60.

Science 60.202*

Introduction to Computers

Also listed as Computer Science 95.102*. See p. 60.

Science 60.206*

Introduction to Data Processing

Also listed as Computer Science 95.104*. See p. 60.

Interdisciplinary Science 00.200

Physical Anthropology (Introduction to the Study of Prehistoric Man)

A course for undergraduates desirous of learning something of what science has to say concerning the history of man. No previous formal training in biology is necessary. Definition and divisions of anthropology; physical anthropology; history, prehistory, and the nature of an historical document; historical introduction to human paleontology; geological time; absolute, relative and conjectural chronology; the evolution of exact chronology; modern techniques. The biological definition of man; relevant comparative anatomy of modern man, the modern anthropoid, and known fossil man. The Australopithecus problem. The Pithecanthropus-Sinanthropus-Atlanthropus group. Heidelberg, Neanderthal, and Cro-Magnon man. The Palestine Group. The relevance of the theory of evolution in the comparative anatomy of these groups. The Teilhard de Chardin synthesis. Pre-historic sites; their occurrence, study and interpretation. Artifacts of fossil man, their nature, classification, and chronology. Prehistoric painting and sculpture. In lieu of essays and term papers students are required to submit a review of each of sixteen texts chosen from the list below. An announcement concerning (a) the spacing of the reviews and, (b) which of them are compulsory, will be

made in class. This course is available as an option to Second- and Third-year students only. For students registered in the Faculty of Science, available only as a free option.

Texts: Leakey, *Adam's Ancestors*; Brace, *The Stages of Human Evolution*; Ardrey, *African Genesis*; LeGros Clark, *Antecedents of Man*; *History of the Primates*; Kroeber, *Anthropology*; *Biology and Race*; Wendt, *In Search of Adam*; Oakley, *Man the Toolmaker*; Burkitt, *Old Stone Age*; Darwin, *Origin of Species*; McKern, editor, *Readings in Physical Anthropology*; Teilhard de Chardin, *The Phenomenon of Man*; Dart, *Adventures with the Missing Link*; Howells, *Evolution of the Genus Homo*; Braidwood, *Prehistoric Men*; Pfeiffer, *The Emergence of Man*; Pilbeam, *The Evolution of Man*; *The Ascent of Man*; Napier, *The Roots of Mankind*; Van-Lawick Goodall, *In the Shadow of Man*; Brothwell, *Digging up Bones*; Heizer, *Man's Discovery of His Past*; Vance Goodall, editor, *The Quest for Man*.

See also Biology 61.391*.

Technology, Society, Environment Studies

Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by two courses intended for Third-year students and organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, and the consumer society concept, and through team projects which bring together students working in different disciplines. The two courses are T.S.E. 59.301, Technology-Society Interaction; and T.S.E. 59.302, Interaction of Technological Society with the Natural Environment and its Resources. They are described on pp. 433-434.

Other Courses

African Studies, see p. 428.

Asian Studies, see p. 429.

Urban Studies, see p. 435.

Women's Studies, see p. 436.

Interdisciplinary Studies, Directed

(Formerly General B.A., St. Patrick's College)

Members of the Committee

Chairman and Program Co-ordinator
S. Robinson (*French*)

Members

D. Bennett (*Geography*)
D. Dubrule (*Philosophy*)
L. Mann (*English*)
E. Tepper (*Political Science*)

Two additional members to be appointed.

6. In order to graduate, students must have a minimum overall grade-point average of 4.0 (C-) in all fifteen credits counted towards the degree.

7. Students must obtain at least one credit at the 300 level or above.

General Information

In Directed Interdisciplinary Studies, a three-year program leading to a B.A. degree, students concentrate on a theme or field of interest which involves courses from various disciplines. Some possibilities are medieval studies, Third World studies, nineteenth-century European studies, African studies, American studies, Asian studies, urban studies, or studies leading to a specific vocational goal. Please refer to the Interdisciplinary section of the Calendar, p. 427, for listings of courses in some of these fields.

Regulations and Degree Requirements

1. Students applying for admission to the program must complete the prescribed application form, available from the office of the Arts and Social Sciences Faculty Registrar. They are required to list and justify a minimum of eight credits related to a significant theme or field of interest and fitting into a coherent pattern. On acceptance of the application, the credits noted above, or any variation later agreed to by the Committee, become a requirement for completion of the degree.
2. Prior to submitting a formal application, students are advised to consult with the Program Co-ordinator for assistance in working out a suitable pattern of courses.
3. To allow time for adequate appraisal by the Committee, the application for admission should be submitted as early as possible before the year of entry to the program, preferably by August 15.
4. Students may apply for admission to the program at any time before they begin their last five credits towards the degree.
5. Normally, three credits in the student's field of interest are to be included among the last five credits taken towards the degree.

Department of Italian

Officers of Instruction

Chairman

M. Ciavolella

Associate Professor

M. Ciavolella

Assistant Professors

F. Loriggio

C. Persi Haines

Instructor

G. Panico

Adjunct Professor

G. Almansi (*University of East Anglia*)

Supervisors of Majors and Honours

M. Ciavolella, F. Loriggio

General Information

The Department offers Major, Combined Major and Combined Honours programs in Italian. Interested students should consult members of the Department to plan their programs in accordance with existing and expected future courses. The Department endeavours within its limited resources to offer essential courses for these programs annually during the Evening division.

All sectioned courses are normally scheduled in the Evening (Italian 26.105*, 26.110*, 26.115, 26.120*, 26.150, 26.155, 26.201*, 26.202*), and three literature courses, one at the 200 level, one at the 300 level and one at the 400 level are normally available annually in the Evening division.

Study Abroad

The Department has established the policy of giving language and civilization courses every summer in Italy. Interested students should contact the Department early in the year for information regarding financial assistance, itinerary, and courses planned.

Major Programs

The requirements for the Major in Italian are a minimum of five courses after Italian 26.150 or equivalent, three of which must be Italian 26.205 and two literature courses at the 300 or 400 level. It is possible as well to take a Combined Major in Italian and another discipline. Requirements of the Department for the

Combined Major are four courses in Italian after Italian 26.150, including 26.205 and a 300 or 400 level literature course. Italian 26.210*, 26.211*, 26.350 will be considered credits as Arts options but not credits towards an Italian program for students enrolled in Major, Combined Major or Combined Honours programs.

Combined Honours Program

Students admitted to Combined Honours programs are required to complete at least twenty credits of which at least six must be in Italian beyond the Intermediate year level. Their programs should include Italian 26.205 and two literature courses at the 300 level and one at the 400 level. Italian 26.491, Special Studies, a directed reading course, is available every year to students who wish to investigate a particular literary genre or topic.

Courses Offered

Italian 26.105*

Spoken Italian, Level I

A beginners' course designed to give the student fundamentals of spoken Italian. Intensive practice in oral expression and comprehension, reading, occasional written work.

Prerequisites: No knowledge of standard Italian or of any dialect is assumed.

Day division, First and Second term: Three hours a week plus one hour of laboratory.

G. Panico

Italian 26.110*

Written Italian

A beginners' course designed to provide the student with the basic elements of Italian structures. Grammar, practice in writing and reading.

Day division, Second term: Three hours a week.

G. Panico

Italian 26.115

Introduction to Italian

A beginners' course designed to give the student the fundamentals of written and spoken Italian. Grammar, reading and oral practice.

Day and Evening divisions: Three hours a week plus one hour of laboratory.

G. Panico

Italian 26.120*

Spoken Italian, Level II

An advanced sequel to Italian 26.105*, this course is essentially oriented towards oral communication.

Prerequisite: Italian 26.105* or 26.115.

Not offered 1980-81.

Italian 26.150

Intermediate Italian

A course intended to consolidate and supplement knowledge of the language and culture acquired in Italian 26.115. Reading of literary texts, composition and oral practice.

Prerequisites: Italian 26.105* and 26.110*, 26.115 or equivalent.

Evening division: Three hours a week plus one hour of laboratory.

M. Ciavolella

Italian 26.155

Intermediate Italian for Dialettologi

A course designed for students of Italian origin who speak Italian dialects but have had no formal training in standard Italian.

Prerequisites: Permission of the Department.

Day division: Three hours a week plus one hour of laboratory.

G. Panico

Italian 26.201*

Italian Conversation

Conversation and discussion of general and current problems, including occasional written work.

Prerequisite: Italian 26.150, 26.155, 26.120* or permission of the Department.

Day division, First term: Three hours a week.

G. Panico

Italian 26.202*

Italian Composition

A course designed to utilize the achievements attained in Italian 26.150, particularly with the view to enabling students to write fluently in Italian.

Prerequisite: Italian 26.150, 26.155 or permission of the Department.

Day division, Second term: Three hours a week.

G. Panico

Italian 26.205

Introduction to the Study of Italian Literature

This course is designed to introduce the student to Italian literature. Emphasis will be placed on the textual analysis of representative works. Required for Majors and Honours.

Prerequisites: Italian 26.201* and 26.202* or permission of the Department.

Day division: Three hours a week.

F. Loriggio

Italian 26.210*

Italian Civilization I: Literature, Arts and Society in Italy from the Thirteenth Century to the Renaissance

This half course, given in English, deals with the literary, artistic, social development of Italy.

Not offered 1980-81.

Italian 26.211*

Italian Civilization II: Literature, Arts and Society in Italy from the Unification to the Present Time

This half course, to be given in English, deals with the literary, artistic, social development of Italy.

Not offered 1980-81.

Italian 26.215*

Italian Heritage

The aim of this half course is to provide the student with an understanding of what Italian culture is and has been. "Culture" is intended in the larger sense: popular art forms are studied along with the more official ones. The course is taught in Italian and focuses, on a rotating basis, on the present or one period of Italian history.

First term: Three hours a week.

To be offered off campus 1980-81. Evening division.

Location to be announced.

F. Loriggio

Italian 26.220

Background to the Study of Italian Literature

A first-hand introduction to the culture, history and art of Italy. The course, given in Italy, is offered in both Italian and English. The Italian section is designed for students who intend to take courses in a Major or Honours program. Students taking the English section will receive credit as an Arts option.

Italian 26.302*

Advanced Composition and Translation

An advanced sequel to Italian 26.202*.

Prerequisite: Italian 26.202* or permission of the Department.

Day division, Second term: Three hours a week.

F. Loriggio

Italian 26.310

Italian Literature I: From the Thirteenth Century to the Beginning of the Renaissance

This course traces the development of the genres of Italian literature during the period indicated. Each of the genres, i.e. poetry, novella, theatre, is given separate and extensive attention.

Prerequisite: Italian 26.205 or permission of the Department.

Not offered 1980-81.

Italian 26.320

Italian Literature II: From the Beginning of the Renaissance to the Baroque

This course traces the development of the genres of Italian literature during the period indicated. Each of the genres, i.e. poetry, novella, heroic poem, theatre, is given separate and extensive attention.

Prerequisite: Italian 26.205 or permission of the Department.

Day division: Three hours a week.

M. Ciavolella

Italian 26.330

Italian Literature III: From the Baroque to the Twentieth Century

This course traces the development of the genres of Italian literature during the period indicated. Each of the genres, i.e. poetry, novel, theatre, is given separate and extensive attention.

Prerequisite: Italian 26.205 or permission of the Department.

Not offered 1980-81.

Italian 26.350*

Italian Literature in Translation

This half course, taught in English, using translated texts, focuses each year on different genres and or different periods of Italian literature. Particular attention is given to those aspects of more relevance to the general European literary and cultural background (for example: Petrarchism, Boccaccio and the novella tradition, Renaissance epic poetry and romances, Renaissance literary theory, Futurism, Neorealism, etc.). Topic for 1980-81. The Epic Tradition.

Day division, Second term: Three hours a week.

M. Ciavolella

Italian 26.400

Dante

An intensive study of Dante and his age with particular reference to the *Divina Commedia*.

Prerequisites: Permission of the Department.

Evening division: Three hours a week.

M. Ciavolella

Italian 26.410

Italian Theatre: From Goldoni to Pirandello

A study of Italian dramatic works with particular emphasis on the theatre reform of Carlo Goldoni and on the theatre of Luigi Pirandello.

Prerequisites: Permission of the Department.

Not offered 1980-81.

Italian 26.420

Contemporary Italian Novel

A study of selected Italian contemporary novels.

Prerequisites: Permission of the Department.

Not offered 1980-81.

Italian 26.430

Twentieth Century Italian Poetry

A study of the most representative contemporary Italian poets.

Prerequisites: Permission of the Department.

Day division: Three hours a week.

F. Loriggio

Italian 26.491

Special Studies

A reading or research course for selected students who wish to investigate a particular literary genre or author in greater depth than it is covered in other courses. Available to Fourth-year students only.

Prerequisites: Permission of the Department.

School of Journalism

For details of programs offered by the School see pp. 100-104.

Courses Offered

Journalism 28.100

Introduction to Journalism Studies

An introduction to the semantic, linguistic and philosophical contexts and materials of journalism, followed by an outline of the historical development of journalism in Europe, the United States and Canada. Discussion groups are workshops for research writings, the production of an audio-visual project, and study of a series of readings.

Prerequisite: For Journalism Honours students only. Day division: Lectures and discussion groups four hours a week.

Roger Bird

Journalism 28.101*

Journalism Workshop

A course designed to provide Journalism students with fundamental skills in typing and note-taking. Students normally take Forkner shorthand during one term and typing during the other, unless they are already qualified in one or both skills. The qualification standard is sixty words per minute for shorthand or speed writing and twenty-five words per minute in typing. The course is marked on a pass/fail basis; students are passed as soon as they have demonstrated proficiency in both skills. Students are not permitted to withdraw from this course except with approval of the School, and must have passed the course before entering Journalism 28.320. There are no formal supplemental examinations in this course.

Prerequisite: For Journalism Honours students only. Day and Evening divisions: Workshops four hours a week.

Mass Communication 27.111

Introduction to Mass Communication

The course provides a foundation for understanding human and mass communications. It is a broad survey course including general semantics, communication theory, mass media issues, telecommunications, and the role of the media in political and social change. Discussion groups or workshops are connected with either projects or research assignments related to the course.

Day division: Lectures and discussion groups four hours a week.

Alan Frizzell

Journalism 28.200

Problems of the Mass Media

An historical and contemporary examination of mass media problems including ownership structure, mono-

poly, government control, freedom and secrecy, responsibility and ethics, public opinion, propaganda, copyright, censorship in war and peace.

Prerequisite: Journalism 28.100 or Mass Communication 27.111.

Day division: Three hours a week.

Peter Johansen

Mass Communication 27.201

Media Research

A systematic analysis of selected substantive and methodological traditions in the field of the mass media and related communications research. Students concurrently undertake an original research project and are encouraged to focus this research on the Canadian scene.

Prerequisite: Second year standing or higher or permission of the School of Journalism.

Day division: Three hours a week.

T.J. Scanlon

Mass Communication 27.211

The Mass Media in Modern Society

An examination of the historical development and current operations of the major mass media, with a view to relating developments to the larger social structure. Emphasis is on the relationship between the media and the structure of Canadian society. (Also listed as Sociology-Anthropology 56.211.)

Prerequisite: One of Journalism 28.100, Mass Communication 27.111, Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or permission of the School of Journalism or the Department of Sociology and Anthropology.

Evening division: Lectures and seminars three hours a week.

Thomas McPhail

Journalism 28.215

The Documentary

This course examines the work of individual film makers, of documentary styles, and of organizations and institutions in the context of the history of documentary film making. Non-fiction films other than documentaries may be considered. (Also listed as Film Studies 19.210.)

Prerequisite: Film Studies 19.100, or permission of the School.

Day division: Lecture and screening three hours, lecture one hour.

Patrick MacFadden

Journalism 28.220

Fundamentals of Reporting

The nature of news values; how to recognize and collect news; how to analyse, organize and report it. Interviewing and news gathering. This is mainly a practical course, based on assignments in reporting and writing for newspapers, radio and television.

Prerequisite: For Honours Journalism students who

have completed Journalism 28.101*, and transfer students.

Day division: Lectures and practical exercises seven hours a week. Enrolment during the Winter session is limited to Journalism Honours students.

Phyllis Wilson

Mass Communication 27.290

Truth and Propaganda

A study of techniques, some ancient as well as modern, for influencing public opinion. The ethics of various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda," "manipulation," and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open society, as against those promoted by closed societies, also receives attention, account being taken of subtler as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Philosophy 32.290.) Day division: Lecture three hours a week.

Journalism 28.300

The Modern Environment

A seminar course for Journalism students in which a number of texts drawn from the social sciences, literature, journalism and philosophy are considered for their contributions to an understanding of contemporary society and the issues which provide the background to much of contemporary journalism. Prerequisites: Journalism 28.100 or Mass Communication 27.111 and Journalism 28.200, or permission of the School.

Day division: Three hours a week.

Patrick MacFadden, Bernard Wand

Journalism 28.305*

International Media Systems

This course is concerned with the flow of world news — how it is collected, transmitted, received, selected, edited and distributed; how it informs or inhibits our views of the world around us. It examines the relationship and dependence of Canadian media on regional and international institutions and systems. It examines such items as media systems; the role of international news agencies; the role of global telecommunication systems; the foreign news-gathering operations of national radio and television networks, and the inter-network arrangements for news distribution; the role of supranational media institutions such as UNESCO, the International Press Institute, the Inter-American Press Association and the International Organization of Journalists; the role of regional distribution agencies

such as Intervision, Eurovision, European Broadcasting Union, Asian Broadcasting Union.

Prerequisite: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the School.

Brian Taylor

Journalism 28.306*

Comparative Media Studies

This course is concerned with comparisons of media content. Comparisons may be cross-cultural in nature (i.e. comparisons of English- and French-Canadian television news), cross-media (i.e. comparisons of radio and print coverage of the same event), cross-national (i.e. comparisons of daily newspaper coverage of the same events in various English-speaking countries), or a mixture of these. There may also be comparisons over time. Some time is spent examining critically and employing research tools and methods used in such studies.

Prerequisite: One of Journalism 28.100, 28.200, Mass Communication 27.111, 27.211 or permission of the School.

Brian Taylor

Mass Communication 27.311

Advanced Study of the Mass Media

An examination of the philosophical and theoretical foundations of mass-communication studies. The course is an analysis of the content of selected theories with a view to assessing the contributions they make to the understanding of mass communication. (Also listed as Sociology-Anthropology 56.311.)

Prerequisite: One of Journalism 28.200, Mass Communication 27.211, Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or permission of the School of Journalism or the Department of Sociology and Anthropology.

Day division: Three hours a week.

J.R. Weston

Journalism 28.320

Advanced Reporting and Editing

The reporting of public affairs for newspapers, radio and television. Students do work in each medium, much of it for publication or broadcast, and gain practical experience in writing for deadline, editing, editorial decision-making and other areas of professional practice.

Prerequisites: Journalism 28.101* and 28.220.

Day division: Day-long seminar once a week.

Marvin Schiff

Journalism 28.321*

Career Seminars

An opportunity for the student to specialize by doing work in such areas as television, radio, magazines, public relations, creative writing, editorial writing, freelancing, the film, or reporting in the French language. Certain of these specialties may not be offered in a given year.

Prerequisite: For Third-year and one-year B.J. students only.

Day division: Annually, as required; two hours alternate weeks all year.

Cameron Graham, Sarah Jennings, Ron Poling, Brian Taylor

Journalism 28.333

Film and Society

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Film Studies 19.333.)

Prerequisite: For Third- and Fourth-year students, or permission of the School.

Day division: Lecture and screening three hours, lecture one hour a week.

Journalism 28.351*

Communications Law I

This course is concerned with the general laws governing the mass media in Canada with attention to their effect on freedom of expression. Specific topics for examination include: contempt of court; free press, fair trial; revealing of sources; civil defamation; criminal libel; obscenity and censorship; copyright; privacy; government secrecy; the law of advertising. (Also listed as Law 51.351*.)

Prerequisite: Permission of the School.

Day division, First term: Lectures and discussions three hours a week.

W.H. Kesterton

Journalism 28.352*

Communications Law II

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, 'good taste', food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Law 51.352*.)

Prerequisite: Permission of the School.

Day division, Second term: Lectures and discussion three hours a week.

Journalism 28.400

Basic Issues

A seminar on leading news topics of the day. Stress is placed upon intensive investigation and consideration of perennial problems as well as emerging public issues likely to confront the professional journalist.

Prerequisite: Journalism 28.300.

Not offered 1980-81.

Mass Communication 27.401

Advanced Media Research

An advanced study of specific methodological issues and statistical techniques appropriate to the investigation of theoretical questions concerning mass communication and society. The course is primarily concerned with the selection of appropriate methodologies and models for investigating specific questions and for this reason the content of the seminar changes somewhat from year to year. Among the topics that may be considered are content analysis, multivariate analysis, scale construction techniques, path analysis and experimental and survey design.

Prerequisite: Mass Communication 27.201 or permission of the School.

J.R. Weston

Mass Communication 27.411

Selected Problems in Mass-Communication Analysis

In a given year, selected policies and practices of media and regulatory institutions are considered. Issues may include the political process, national sovereignty, national identity or cultural values in relation to mass communications. (Also listed as Sociology-Anthropology 56.411.)

Prerequisite: Fourth-year standing in Honours Mass Communication or permission of the School of Journalism or the Department of Sociology and Anthropology.

Day division: Seminar three hours a week.

Thomas McPhail

Journalism 28.421

Specialized Reporting

An opportunity for students to specialize by acquiring background and undertaking assignments in all media in various specialized areas, such as science and technology, business and finance, sports, the arts, international affairs, Canadian politics and government, social welfare. Certain of these specialties may not be offered in a given year.

Prerequisite: Journalism 28.320.

Day division: Three hours a week.

Wayne Cheveldayoff, John Hay, Patrick MacFadden, Carl Mollins, T.J. Scanlon

Journalism 28.434*

Media and Society I

An analysis of communications theory and the development of communications media as influential institutions in western society, with special attention to landmark events in Canada, Britain and the United States. An emphasis is placed upon current social science research studies as they relate to journalism and communication.

Prerequisite: For students in the one-year program.

Stuart Adam

Journalism 28.435*

Media and Society II

An examination of the role and structure of the news media in Canada with special attention to problems of ownership, monopoly, government control, content, censorship and social and political responsibility.

Prerequisite: For students in the one-year program.

Peter Johansen

Journalism 28.440*

Media Practices

Combined seminars and workshops in news judgment and its application; principles of newsroom structure, organization and operations as applied throughout Canada; copy editing, headwriting and makeup; analysis of role of various editors; links between media and public.

Prerequisite: For students in the one-year program.

Murray Goldblatt

Journalism 28.441*

Reporting Laboratory I

A laboratory course in basic reporting in various media.

Prerequisite: For students in the one-year program.

Robert Rupert

Journalism 28.442*

Reporting Laboratory II

A laboratory course in advanced reporting in various media.

Prerequisite: For students in the one-year program.

Robert Rupert

Journalism 28.444*

Interpretative Reporting

An examination of research and writing techniques used in feature and background reporting. Students research to professional standards the material needed for a series of articles on a subject of their own choosing, normally related to public affairs in the Ottawa area. While the emphasis is on a print series students may, with permission, work in other media.

Prerequisite: For students in the one-year program.

Journalism 28.451* (28.445*)

Basic Journalism Law

The purpose of this course is to prepare journalists to function comfortably within the legal guidelines governing their occupation. The course also aims to help them avoid the large errors in reporting legal matters. Topics studied and discussed include: the difference between civil and criminal law; contempt of court; free press, fair trial; revealing of sources; civil defamation; criminal libel; obscenity; copyright; privacy; government secrecy; advertising law.

Prerequisite: For students in the one-year program.

W.H. Kesterton

Journalism 28.461*

Perspectives on Modern Society

A seminar course examining texts from the social sciences, philosophy, literature and journalism for the

contribution they make to an understanding of issues facing modern industrial society.

Prerequisite: For students in the one-year program.

Roger Bird, Alan Frizzell

Journalism 28.462*

Public Issues in Canada

A seminar course examining literature and other sources in an attempt to understand continuing and emerging political, social and economic problems in contemporary Canada.

Prerequisite: For students in the one-year program.

Roger Bird, Alan Frizzell

Journalism 28.490

Honours Tutorial

Students are asked to analyse some of the major achievements in contemporary journalism. They work individually and in groups in presenting research papers. Students are also given the opportunity to acquire background and experience in the managerial aspects and production of print and broadcast journalism.

Prerequisite: Journalism 28.320.

Peter Johansen

Mass Communication 27.497

Honours Essay

During their Fourth year, Honours candidates in Mass Communication are required to present a major research essay. The Honours Essay is carried out under the direction of a faculty supervisor who is either selected by the candidate or assigned early in the year. Candidates are examined orally on their essays.

Prerequisite: Final-year Honours standing in Mass Communication.*

J.R. Weston (co-ordinator)

Journalism 28.498

Honours Research

Students in this course have to carry out directed research and prepare a project under the supervision of one faculty member. The deadline for completion of the Honours research project is April 1.

Prerequisite: For B.J. Honours students only.*

Day division.

Alan Frizzell (co-ordinator)

Journalism 28.499

Research Credit

Students carry out directed research and prepare a project under the supervision of one faculty member. The deadline for completion of the Honours research project is April 1.

Prerequisite: For students in the one-year program.*

Day division.

W.H. Kesterton (co-ordinator)

*Students should refer to general Faculty of Arts regulations regarding submission of Honours Essays, (pp. 91-92).

Officers of Instruction

Chairman

R.L. Campbell

Supervisor of Honours

D. Fraser

Supervisor of Majors

C.N. Sargent

Professors

R.D. Abbott

P.J. Fitzgerald

D. Fraser

J. George Neuspiel

Associate Professors

J. Barnes

R.L. Campbell

D.W. Elliott

C.G. McShane

A. MacKenzie

D. Wayand

Assistant Professors

P.J. Davidson

M.H. Ogilvie

C.N. Sargent

R.P. Saunders

Adjunct Professors

A. Cohen

D. Pharand

Professional Lecturers

C.A. Becker

Burchill

P. Burnet

M.H. Davies

G. Dearden

R.L. Doering

T. Elton

D. Fraser

E. Gilhooly

V.T. Houston

E. Johnson

A.A. Keenleyside

P. Kelly

E. Keyserlingk

T. McEnery

L. McFadyen

S. McLean

T. MacNab

M. Morrow

I.W. Morse

G. Mosley

P. Nadin-Davis

G. O'Neill

J.D. Payne

J.R. Read

S. Ritchie

G. Robichon

L.A. Roine

N.J. Schultz

J. Swan

E.M. Thomas

G. Watkins

General Information

Courses and programs in this Department are intended to promote an awareness of the place of rules respecting human conduct in the political, social and economic environment. Many law courses were originally established to meet the need of students in other programs for a knowledge of the legal aspects of their own disciplines. It is a continuing desire of the Department that students bring to bear on legal problems the insights of other disciplines and it is the Department's hope that students will benefit from a knowledge of the techniques of legal analysis and of legal principles. Successful completion of courses or programs in the Department *does not* qualify anyone to practise law or give counsel on legal matters.

Students intending to proceed to a law school should note that at present no credit is given towards a law degree for Law courses taken at Carleton. However, prospective law students may find Carleton Law courses valuable introductions to professional studies. Members of the Department are available to advise prospective law students as to their choice of law school and the selection of courses at this University.

The Department of Law offers programs leading to both Major and Honours degrees in Law. Students may also undertake the study of law in a combined Major or Honours program in conjunction with another discipline.

Major Program

The Major program is governed by the following regulations:

1. All Major programs must be approved by the Department after consultation with the Supervisor of Majors or some other member of the Department specifically designated for that purpose.

2. A Major in Law requires a minimum of six but normally not more than nine full Law courses or their equivalent according to the following prescribed pattern:

- (a) Law 51.100, or the combination of 51.101* with 51.102*; and
- (b) Law 51.200; and

(c) At least three courses chosen from among the following five areas with at least one course from each of three different areas:

(i) Theory of Law: 51.210, 51.311*, 51.312*, 51.353, 51.355*;

(ii) Comparative Law: 51.322, 51.386*, 51.387*, 51.463, 51.488;

(iii) Law and the Economy: 51.220, 51.320, 51.321, 51.323, 51.324, 51.325*, 51.326*, 51.420*, 51.421*, 51.441;

(iv) Law and Government: 51.205, 51.351*, 51.352*, 51.374, 51.380, 51.441, 51.445*, 51.450, 51.456*, 51.457*, 51.463; and

(v) Law and Society: 51.234, 51.284, 51.301*, 51.325*, 51.326*, 51.333, 51.348*, 51.354*.

(d) at least one additional law course at the 300 level or higher.

3. Students must either:

(a) Have taken Law 51.100 or its equivalents and obtained a grade of C- or better at the time of declaring a Law Major; or

(b) include Law 51.100 or its equivalents in their program immediately after declaring a Law Major and obtain a grade of C- or better in it.

4. In addition to the law courses, majors must normally take at least three approved courses in one other discipline.

5. Students in the Major program must satisfy the general University regulations for Majors programs.

Note:

The attention of Major students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Majors and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

Honours Program

The Honours program is governed by the following regulations:

1. All Honours programs must be approved by the Department after consultation with the Supervisor of Honours or some other member of the Department specifically designated for that purpose.

2. An Honours student must complete a minimum of twenty-five courses from Junior Matriculation or a minimum of twenty courses from Senior Matriculation including at least eight and normally not more than twelve full law courses or their equivalent according to the following prescribed pattern:

(a) Law 51.100, or the combination of 51.101* and 51.102*; and

(b) Law 51.200; and

(c) At least five courses chosen from among the following five areas with at least one course from each of three different areas and at least one course at the 400 level or higher:

(i) Theory of Law: 51.210, 51.311*, 51.312*, 51.353, 51.355*, 51.510F1;

(ii) Comparative Law: 51.322, 51.386*, 51.387*, 51.463, 51.488;

(iii) Law and the Economy: 51.220, 51.320, 51.321, 51.323, 51.324, 51.325*, 51.326*, 51.420*, 51.421*, 51.441;

(iv) Law and Government: 51.205, 51.351*, 51.352*, 51.374, 51.380, 51.441, 51.445*, 51.450, 51.456*, 51.457*, 51.463, 51.553W1, 51.567W1; and

(v) Law and Society: 51.234, 51.284, 51.301*, 51.325*, 51.326*, 51.333, 51.348*, 51.354*.

(d) an Honours essay in Law (51.498).

3. Students must either:

(a) Have taken Law 51.100 or its equivalents and obtained a grade of C or better at the time of entering the Honours program; or

(b) Include Law 51.100 or its equivalents in their program immediately after entering the Honours program and obtain a grade of C or better in it.

4. Students in the Honours program must have obtained a grade of B- or better in their Honours essay in Law (51.498).

5. In addition to the law courses, Honours students must normally take at least three approved courses in one other discipline.

6. Students in the Honours program must satisfy the general University regulations for B.A. Honours programs.

Note:

Attention of Honours students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Honours and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

Combined Major Program

The Combined Major program is governed by the following regulations:

1. All Combined Major programs must be approved by the Department after consultation with the Supervisor of Majors or some other member of the Department specifically designated for that purpose.

2. Combined Major students will complete at least five, but normally not more than seven full law courses or their equivalent according to the following prescribed pattern:

(a) Law 51.100, or the combination of 51.101* with 51.102*; and

- (b) Law 51.200; and
- (c) One Law course at the 300 level or higher; and
- (d) At least two further Law courses or their equivalent, but not including Law 51.201.

3. Students whose other discipline in a Combined Major program is not in the Faculty of Social Sciences must take at least one introductory or survey course in a social science as may be approved by the Department.

4. Combined Major students must obtain a grade of C- or better in Law 51.100, or in the combination of its prescribed equivalents.

5. Students in the Combined Major program must satisfy the general University regulations governing B.A. Major programs.

6. All transitional arrangements governing entry into a Combined Major program and published in previous issues of the Calendar are revoked.

Note:

The attention of Combined Major students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Majors and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

Combined Honours Program

The Combined Honours program is governed by the following regulations:

1. All Combined Honours programs must be approved by the Department after consultation with the Supervisor of Honours or some other member of the Department specifically designated for that purpose.

2. Combined Honours students must complete a minimum of twenty-five courses from Junior Matriculation or a minimum of twenty courses from Senior Matriculation.

3. Combined Honours students will complete at least six but normally not more than nine full law courses, or their equivalent according to the following prescribed pattern:

(a) Law 51.100, or the combination of 51.101* with 51.102*; and

(b) Law 51.200; and

(c) at least one Law course at the 300 level or higher; and

(d) at least one other Law course at the 400 level; and

(e) an Honours essay in Law (51.498), or a designated equivalent, or an Honours essay in the other combined discipline. (When the Honours essay is in the other discipline, students are required to take Law 51.490, Directed Studies in Law); and

(f) at least one other Law course which may not include Law 51.201

4. Students whose other discipline in a Combined Honours program is not in the Faculty of Social Sciences must take at least one introductory or survey course in a social science as may be approved by the Department.

5. Combined Honours students must obtain a grade of C- or better in Law 51.100, or in the combination of its prescribed equivalents.

6. Students in a Combined Honours program must have obtained a grade of B- or better in their Honours Essay in Law (51.498), or in the designated equivalent. Similarly a grade of B- or better is required in Directed Studies in Law 51.490, whenever this course is offered in substitution of the Honours Essay in Law, in accordance with the provisions of regulation 3(e) above.

7. Students in a Combined Honours program must satisfy the general University regulations for B.A. Honours programs.

8. Where the Combined Honours program is with the School of Journalism, and the Honours essay is done in Journalism, the degree awarded will be the Honours Bachelor of Journalism with Law. Students are directed to the regulations of the School of Journalism which includes a requirement of twenty-one courses in four years.

Note:

The attention of Combined Honours students is drawn to the requirement that any change in their program must be expressly approved by the departmental Supervisor of Honours and that this approval must not be presumed. Failure to heed the departmental Supervisor's advice may result in the student's ineligibility for certain advanced and graduate courses and programs or ineligibility to graduate.

Criminology and Corrections Concentration

For details see p. 130.

Off-Campus Courses

Law

51.220 Commercial Law I

Prerequisites

The attention of students is drawn to the fact that many law courses have designated prerequisites. In some instances "permission of the Department" is an alternative to the specified prerequisite. It must not be presumed that such permission will be granted automatically; and it may be granted subject to certain conditions, including the fulfillment of preliminary reading requirements or the submission of some written work.

Some Possible Law Course Sequences In Various Areas of Interest

Theory of Law: 51.100, 51.200, 51.201, 51.210, 51.311*, 51.312*, 51.353, 51.355*.

Comparative Law: 51.100, 51.201, 51.322, 51.386*, 51.387*, 51.463, 51.488, 51.563F1, 51.567W1.

Law and the Economy: 51.100, 51.220, 51.320, 51.321, 51.322, 51.323, 51.324, 51.325*, 51.326*, 51.420*, 51.421*, 51.441.

Law and Government: 51.100, 51.205, 51.351*, 51.352*, 51.353, 51.354*, 51.374, 51.380, 51.441, 51.445*, 51.450, 51.456*, 51.457*, 51.463, 51.553W1, 51.555W1, 51.567W1.

Law and Society: 51.100, 51.200, 51.201, 51.234, 51.284, 51.301*, 51.325*, 51.326*, 51.333, 51.348*, 51.353, 51.354*, 51.355*.

The foregoing suggestions are not intended to limit Combined Major or Combined Honours students in their selection of courses in accordance with individual wishes. Students planning to take either a Major, Combined Major, Honours or Combined Honours program in Law should carefully read the relevant Department, Faculty, and University regulations, and should not select any courses other than Law 51.100 and 51.200 without consulting the Department's adviser for Majors or Honours.

Courses Offered

Law 51.100

Introduction to Legal Studies

An historical introduction to the study of law and to the legal system; the background to the British and Canadian constitutions, general concepts of constitutional and administrative law; the development of public and private law from the Anglo-Saxon period to the present; the legal institutions of Canada and the place of law and of the courts in the community; legal interpretation and the use of legal precedents.

Day and Evening divisions: Lectures three hours a week, group workshops one hour a week.

R.L. Doering, P.J. Fitzgerald, K.G. McShane, P. Nadin-Davis, M.H. Ogilvie

Note:

Law 51.100 and the combination of Law 51.101* with 51.102* are completely identical in content and only one of them may be taken for credit.

Law 51.101*

Historical Introduction to Legal Studies

An historical introduction to the study of law and to the legal system; the background of the British and Canadian constitutions, general concepts of constitutional and administrative law. Development of public and

private law from the Anglo-Saxon period to the present; the rule of law.

Day and Evening divisions, First term: Lectures three hours a week, group workshops one hour a week.

P. Burnet, R.L. Doering

Note:

Law 51.100 and the combination of Law 51.101* with 51.102* are completely identical in content and only one of them may be taken for credit.

Law 51.102*

Introduction to the Canadian Legal System

The Canadian legal system with emphasis on the organization and jurisdiction of the courts. A study of the doctrine of precedent with case studies drawn from law of torts. Legal interpretation of statutes. Canadian criminal process and civil procedures. Public law and problem of subordinate legislation. The place of law and of the courts in the community.

Prerequisite: Law 51.101*.

Day and Evening divisions, Second term: Lectures three hours a week, group workshops one hour a week.

R.L. Doering, P.J. Fitzgerald, K.G. McShane, P. Nadin-Davis

Note:

Law 51.100 and the combination of Law 51.101* with 51.102* are completely identical in content and only one of them may be taken for credit.

Law 51.200

The Legal Process

A methodological study of the legal process in general, with particular reference to its operation in the Canadian legal system; the nature of legal rules, principles, standards and concepts; the advantages and disadvantages of the legal process in comparison with other processes for the solution of conflicts. This course is designed for students who intend to select Law as their Major or Honours subject or as one of their Combined Major or Honours subjects.

Prerequisite: Law 51.100 or permission of the Department.

Day and Evening divisions: Seminars three hours a week.

J. Barnes, E. Gilhooly, J.R. Read, R.P. Saunders, N.J. Schultz

Note:

Only one of Law 51.200 or 51.201 may be taken for credit.

Law 51.201

The Elements of Law

A topical survey of the Canadian legal system including its concepts, institutions, processes and functions. As this course is particularly designed for teachers of law in high schools, the methodological problems are emphasized.

Note:

Law 51.201 may not be taken for credit towards a

Major, Honours, Combined Major or Honours degree in Law.

Prerequisite: Permission of the Department.

Law 51.205

Introduction to Public Law

A basic study, with special reference to Canadian institutions, of the law governing the relationships between the state and the individual, and the workings of the different organs of the state. Constitutions, the role of the judiciary in constitution-making, division of legislative powers. Introduction to the principles of administrative law. Legislation for protection of general and minority rights. Role of courts and related institutions in selected public law fields.

Prerequisite: An introductory course in Political Science or Law 51.100 (or its equivalents) or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

G. Robichon

Law 51.210

Theory of Law and Politics

A study of the interrelated theories of law and politics, as they were treated by prominent thinkers and by important schools of thought, and as they manifested themselves in various legal and political institutions throughout history. Topics of investigation include: law and ethics; justice and equity; positivism and natural law; state absolutism and positive law; the political background of past codifications, as well as anthropological and historical theories of law and society. (Students interested in the sociological aspects of this topic are referred to Sociology-Anthropology 56.286*.)

Prerequisite: Law 51.100 (or its equivalents), or Political Science 47.100 or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

D. Wayand

Law 51.220

Commercial Law I

An examination of the principles of contract including formation, enforceability, capacity, privity, discharge and remedies for breach; the formation of the contract of sale, the duties and remedies of both parties under the Ontario Sale of Goods Act; the application of the Personal Property Security Act; special contracts including those of tenancy and bailment; proposals for reforms.

Day and Evening divisions: Lectures three hours a week, group workshop one hour a week.

P.J. Davidson, L. Kelly, P.T. McEnery, M.H. Ogilvie, C.N. Sargent, R.P. Saunders

Law 51.234

Law and Antisocial Behaviour

Canadian criminal process; the nature and purpose of criminal law; the criminal act as distinguished from civil wrong; the origin and development of contemporary principles and procedures, the various categories of criminal conduct. The role of enforcement agencies and of the courts in the administration of criminal law. Methods of criminal correction. Introduction to the study of the relationship between criminal activity and deviant behaviour.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201, 51.205 or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

C.A. Becker, F. Burchill, T. Elton, J.E. Johnson, R.G. Mosley

Law 51.284

Law of the Family

Law and the family as a unit; engagement, marriage and dissolution of marriage; rights and duties of spouses and parents. The law and the child; care, custody, access, guardianship, adoption, illegitimacy. The role of courts and of social welfare agencies.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201, 51.205 or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

R. Morrow, J.D. Payne

Law 51.301*

Women and the Legal Process

This course examines the manner in which the legal process has affected the status of women. Areas of concentration within the Canadian context include the criminal law, citizenship and immigration, education, employment, and welfare and social services.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201 or permission of the Department.

Day or Evening division, Second term: Lectures and discussions three hours a week.

J. Swan

Law 51.311*

The Nature of Law

This course examines the concept of law, leading theories of law and related concepts such as rules and obligations, power and authority, coercion, and justice. (Also listed as Philosophy 32.311*. Students interested in the sociological aspects of this topic are also referred to Sociology-Anthropology 56.286*.)

Prerequisite: One of Law 51.100 (or its equivalents), or Law 51.210, or permission of the Department.

Day division, First term: Lectures and discussions three hours a week.

P.J. Fitzgerald

Note:

Students who have obtained credit for Law 51.310 (Philosophy 32.350) cannot also obtain credit for Law 51.311* (Philosophy 32.311*).

Law 51.312*

The Logic of the Law

This course examines the nature of legal reasoning and analyses concepts particularly used in the course of legal reasoning such as rights and duties, ownership and possession, liability and punishment. (Also listed as Philosophy 32.312*. Students interested in the sociological aspects of this topic are also referred to Sociology-Anthropology 56.286*.)

Prerequisite: One of Law 51.100 (or its equivalents), or Law 51.210, or permission of the Department.

Day division, Second term: Lectures and discussions three hours a week.

Note:

Students who have obtained credit for Law 51.310 (Philosophy 32.350) cannot also obtain credit for Law 51.312* (Philosophy 32.312*).

Law 51.320

Commercial Law II

This course deals with the principles of agency, the contract of employment, and the law of landlord and tenant. These areas are examined with particular emphasis on the rights and duties of parties to the relationship, and the rights of persons dealing with parties and the termination of the relationship. Both commercial and residential tenancies are examined in the law of landlord and tenant.

Prerequisite: Law 51.220 or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

Law 51.321

Company Law

The law relating to corporations and partnerships in Canada; the historical development of the corporate device; rights and duties of officers, directors and shareholders of the corporation; legal aspects of corporate finance; comparative aspects of corporation law in the United Kingdom, the United States and Europe.

Prerequisite: Law 51.220 or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

R.L. Campbell

Law 51.322

International Economic Law I

A general introduction to the legal aspects of foreign trade transactions. Standardized export and import trade terms. Forms, incidents and documentation of various types of foreign trade contracts. Conflict avoidance, arbitration and litigation arising from inter-

national transactions. Governmental regulation of foreign trade. Legal aspects of the international transfer of investments and technology. Conventions and institutions of international economic cooperation (e.g. GATT, ICC, IMF, etc.).

Prerequisite: Law 51.220 or permission of the Department.

Day division: Lectures and discussions three hours a week.

P.J. Davidson

Law 51.323

The Legal Nature of Property

The nature and history, creation and termination of interests in different types of property, with particular reference to the law of real property. Topics include the different types of ownership, creation and effect of third-party rights in land, disposition of property on death, conveyancing and restrictions over the use of land.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200 or permission of the Department.

Day or Evening division: Lectures and discussions three hours a week.

C.N. Sargent

Law 51.324

Tax Law and Policy

An introduction to federal income taxation, both personal and corporate, and a review of the Canadian tax system generally with some reference to the development, implementation and enforcement of tax policy.

Prerequisite: Law 51.220 or permission of the Department.

Day and Evening divisions: Lectures and discussions three hours a week.

P.J. Davidson, J.A. MacKenzie, C.T. MacNabb

Law 51.325*

Consumer Law

This course examines the need for consumer protection in the provision of goods and services, and investigates the traditional legal protection afforded by statute and common law, the legislative response to consumer pressures and the judicial response in recent Canadian, English and American law. In addition, reform of consumer law is considered.

Prerequisite: Law 51.220 or permission of the Department.

Day division, First term: Lectures and discussions three hours a week.

M.H. Ogilvie

Note:

Students who have obtained credit for Law 51.325 (Consumer Law) cannot also obtain credit for Law 51.325* (Consumer Law).

Law 51.326*

Banking Law and Negotiable Instruments

This course examines the law relating to banks, banking and negotiable instruments. Particular emphasis is placed on the nature of the legal relationship created on the legal rights and duties of the parties involved. Areas studied include the consumer and commercial aspects of banking (including computerization) and bills of exchange, cheques and promissory notes as well as credit cards.

Prerequisite: Law 51.220 or permission of the Department.

Day division, Second term: Lectures and discussions three hours a week.

M.H. Ogilvie

Law 51.333

Torts

The protection of personal interests in physical and proprietary security from interference. The manner in which the legislatures and the courts develop and broaden the law to meet the needs of a changing society. Compensation and loss distribution. The principal matters studied include: intentional torts, negligence, strict liability; and nuisance.

Prerequisite: Law 51.100 (or its equivalents), or 51.200 or permission of the Department.

Day division: Lectures and discussions three hours a week.

D. Wayand

Law 51.348*

Legal Aspects of Sport

This course deals with issues in the legal regulation of sporting activities in Canada. Subjects considered include the constitutional power to regulate sport, government involvement in sports administration, criminal prosecutions for sports violence, civil liability for sports injuries including actions against school boards, sex discrimination in sport, and legal, economic and commercial aspects of professional and intercollegiate leagues including players' employment contracts and disciplinary proceedings.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.220 or permission of the Department.

Day or Evening division, First term: Lectures and discussions three hours a week.

J. Barnes

Law 51.351*

Communications Law I

This course is concerned with the general laws governing the mass media in Canada, with attention to their effect on contempt of court, free press, fair trial, revealing of sources, civil defamation, criminal libel, obscenity and censorship, copyright, privacy, government secrecy, the law of advertising. (Also listed as Journalism 28.351*.)

Prerequisite: Permission of the Department.

Day division, First term: Lectures and discussions three hours a week.

W.H. Kesterton

Law 51.352*

Communications Law II

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, 'good taste', food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Journalism 28.352*.)

Prerequisite: Permission of the Department.

Evening division, Second term: Lectures and discussions three hours a week.

G. Watkins

Law 51.353

Civil Liberties and Human Rights

This course examines legal conflicts which raise issues affecting basic freedoms of individuals or groups in Canadian society. The recurrent theme is the appropriate balance to strike between the rights of the individual and the rights of that collectivity of individuals called society. Specific topics examined include: the concept of liberty; law and conscience; civil disobedience; crimes without victims; civil liberties and constitutional guarantees; the Canadian Bill of Rights; racial discrimination and human rights legislation; hate literature and its control; legal problems of minority groups; poverty and law.

Prerequisite: One of Law 51.200 or 51.205 or permission of the Department.

Day and Evening divisions: Seminars three hours a week.

M.H. Davies, K.G. McShane

Law 51.354*

Law and Native Peoples of Canada

A study of the legal situation of native peoples in Canada. Topics include the constitutional framework of the law, Indian status, aboriginal rights, the treaty system, the relations between special native rights and the principle of equality before the law, hunting rights, government policy and the reserve system. Comparative references to native policy in other countries are also considered. (Students interested in the anthropological aspects of this topic are also referred to Anthropology 54.476*.)

Prerequisite: One of Law 51.205, 51.353 or permission of the Department.

Day or Evening division, First term: Lectures and discussions three hours a week.

J.L. McFadyen, B.W. Morse

Law 51.355*

Law Reform and the Protection of Life

A study of the relationship between law, medicine and ethics concerning questions about life and death.

Topics considered include the definition of death; cessation of treatment and euthanasia; right to refuse treatment; "right to die" legislation; meaning of "person" in the medical/legal context; informed consent; human experimentation; behaviour modification; and quality of life.

Prerequisite: Law 51.100 or permission of the Department.

Evening division, First term: Seminars three hours a week.

E. Keyserlingk

Law 51.374

Local Government Law

The legal framework of local and regional governments; the distribution of functions between the levels of local government and problems of the relationship between local government bodies and provincial and federal authorities; planning law and land use, regionalism and local government reform. (Also listed as Geography 45.374.)

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201, 51.205 or permission of the Department.

Evening division: Lectures and discussions three hours a week.

E.M. Thomas

Law 51.380

Law of Environmental Quality

The legal process relating to resource conservation and to the control and abatement of pollution in water, air and land. The common law and statutory remedies through private actions in the ordinary courts; the role of public authorities through coercive techniques such as criminal sanctions, licensing of resource use, licensing of pollution, and direct remedial actions; non-coercive techniques such as subsidies, tax incentives, public works, research and persuasion; land-use control techniques in protecting environmental quality; constitutional division of legislative competence concerning these matters; administrative problems of achieving interjurisdictional cooperation in activities by public authorities.

Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201, 51.205 or permission of the Department.

Evening division: Lectures and discussions three hours a week.

Law 51.386*

The Civilist Tradition

A comparative study of selected topics of several major European legal systems which are based on Roman Law. The development of Roman Law up to and including Justinian's *corpus juris civilis*. The reception of Roman Law by various European continental legal systems. Comparative analysis of selected articles of the French, Austrian and German codes.

Prerequisite: One of Law 51.100, 51.200, 51.205, 51.210 or permission of the Department.

Day or Evening division, First term: Lectures and discussions three hours a week.

D. Wayand

Law 51.387*

Quebec Civil Law

A comparative examination of the legal system of Quebec. The weight and importance of the various sources of law in Quebec and how the law is made. Study of the Quebec Civil Code and of the force of the Code provisions. Division of the Code and influence of Roman Law. Techniques of interpretation of the Code. Detailed study of selected Articles of the Code. Interpretation and application of the Code in Federal Appeal Courts.

Prerequisite: One of Law 51.100, 51.200, 51.205, 51.210, 51.386* or permission of the Department.

Day or Evening division, Second term: Lectures and discussions three hours a week.

D. Wayand

Law 51.420*

International Economic Law II

A study of the laws governing trade relations with selected global and/or regional economic organizations.

Prerequisite: Law 51.322 or permission of the Department.

Not offered 1980-81.

Law 51.421*

International Economic Law III

An advanced study of the detailed rules governing economic relations with selected global and/or regional economic organizations.

Prerequisites: One of Law 51.322, 51.420* or permission of the Department.

Not offered 1980-81.

Law 51.441

Labour Law

A study of the ordering role of law in industrial relations processes. The study considers the effect of law on the relationship among employer, employer association, employee, union, and the public. The main process considered is collective bargaining, and sub-processes studied are the recognition of the bargaining agent, bargaining for the collective agreement, and administration of the agreement. The principal ordering role of law that is considered is its attempt to resolve industrial conflict, which includes formalization of disputes in adversary modes, as well as methods of resolution. The ordering role is studied in its social as well as its legal context, by the use of non-decisional materials as well as cases.

Prerequisite: Law 51.100 (or its equivalents) or permission of the Department.

Evening division: Seminars three hours a week.

D. Fraser, L.A. Roine

Law 51.445*

Labour Relations in the Public Service

A study of the collective bargaining process in the public sector with particular emphasis on the Federal, Ontario and Quebec Public Services. The problems of adapting accepted collective bargaining procedures and techniques to the public service environment; the right to strike in the public service and essential industries; grievance procedures; the general problem of labour-management relationships in the public sector and the consequences thereof for efficiency and loyalty.

Prerequisite: An introductory course in Law, or a Political Science course in Canadian government, or Law 51.441 or permission of the Department.

Evening division, Second term: Seminars three hours a week.

Law 51.450

Canadian Constitutional Law

A detailed study of the basic principles of the Canadian Constitution. Sovereignty, the Rule of Law, the nature and limits of executive, legislative, and judicial power in Canada as interpreted by the courts. The distribution of powers under the Canadian Constitution. An investigation of contemporary legal problems of federalism. Prerequisite: One of Law 51.100 (or its equivalents), or 51.200, 51.201, 51.205, or a Political Science course in Canadian government or permission of the Department. Day or Evening division: Lectures and discussions three hours a week.

J. George Neuspiel

Law 51.456*

Administrative Law I

Administrative law and practice. Defining and implementing public policy, creating and structuring the administrative body, and interpreting the enabling statute. Comparisons between administrative bodies and courts of law. Procedure before administrative bodies. Comparisons between individual federal and provincial administrative bodies.

Prerequisite: One of Law 51.200, 51.205 or permission of the Department.

Day or Evening division, First term: Lectures and discussions three hours a week.

K.S. MacLean

Note:

Students who have obtained credit for Law 51.455 (Administrative Law I) cannot also obtain credit for Law 51.456* (Administrative Law I).

Law 51.457*

Administrative Law II

Characteristics and problems of control of administrative action. Varieties of legal control, judicial review, discretion, privative provisions and damages, appellate control and statutory reform.

Prerequisite: Law 51.456*, Public Administration 50.536* or permission of the Department.

Day or Evening division, Second term: Lectures and discussions three hours a week.

K.S. MacLean

Note:

Students who have obtained credit for Law 51.455 (Administrative Law I) cannot also obtain credit for Law 51.457* (Administrative Law II).

Law 51.463

Public International Law

An examination of the role of law in contemporary international relations. Nature, history and sources of international law. International personality of states; the status of international organizations and individuals; creation and effect of international obligations; importance and functions of law in the settlement of international disputes.

Prerequisites: One of Law 51.100 (or its equivalents), or 51.200, 51.205 or permission of the Department.

Day or Evening division: Seminars three hours a week.

J. George Neuspiel

Law 51.488

Socialist Legal Systems

A comparative approach to selected legal problems of the Soviet Union and a number of other socialist states. Marxist concepts of state and law, the Leninist, Stalinist and contemporary interpretations of law and their practical applications.

Prerequisites: One of Law 51.100 (or its equivalents), 51.200, 51.205, 51.386*, 51.450, a course in East European government or in the history of eastern Europe or permission of the Department.

Law 51.490

Directed Studies

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only.

Prerequisite: Permission of the Department.

Includes weekly workshops during First term.

Law 51.491*

Tutorial in Law

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

First term.

Law 51.492*

Tutorial in Law

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Second term.

Law 51.493*

Contemporary Legal Topics

The topics of this course, to be offered as demand warrants, vary from year to year, and will be announced well in advance of the period of registration.

Prerequisite: Permission of the Department.

Day or Evening division, First term: Hours to be arranged.

Law 51.494*

Contemporary Legal Topics

The topics of this course, to be offered as demand warrants, vary from year to year, and will be announced well in advance of the period of registration.

Prerequisite: Permission of the Department.

Day or Evening division, Second term: Hours to be arranged.

Law 51.498

Honours Essay

Students in the Honours program must write an Honours Essay or a designated equivalent. Students in the Combined Honours program are required to write an Honours Essay in Law or a designated equivalent, unless they are writing the Honours Essay in the other discipline, in which case they are required to take Law 51.490 (Directed Studies), or a designated equivalent. Includes weekly workshops during First term.

P.J. Fitzgerald

Graduate Courses Open to Undergraduate Students

Law

- 51.510F1 Advanced Problems in Legal Philosophy
- 51.553W1 Advanced Legal Problems of Federalism
- 51.555W1 Advanced Administrative Law Problems
- 51.567W1 Advanced International Legal Problems

Courses Planned for Summer School and Evening Division

As of publication of this Calendar, the Department hopes to be able to offer the following courses during the Summer sessions and Evening divisions for the next three years. Changes may be made, however, and interested persons are urged to consult the Department and to refer to future issues of the Calendar as they are published.

Summer 1981

51.101*, 51.102*, 51.200, 51.205, 51.220, 51.234, 51.284, 51.321, 51.324, 51.353, 51.441, 51.456*, 51.457*.

Evening division 1981-82

51.100, 51.101*, 51.102*, 51.200, 51.201, 51.205, 51.220, 51.234, 51.284, 51.301*, 51.321, 51.322, 51.323, 51.324, 51.325*, 51.326*, 51.348*, 51.352*, 51.355*, 51.374, 51.380, 51.441, 51.445*, 51.450, 51.456*, 51.457*, 51.463.

Summer 1982

51.101*, 51.102*, 51.200, 51.205, 51.220, 51.234, 51.284, 51.301*, 51.320, 51.324, 51.353, 51.441, 51.450.

Evening Division 1982-83

51.100, 51.101*, 51.102*, 51.200, 51.205, 51.220, 51.234, 51.284, 51.301*, 51.320, 51.321, 51.323, 51.324, 51.348*, 51.352*, 51.353, 51.355*, 51.374, 51.380, 51.441, 51.445*, 51.450, 51.456*, 51.457*.

Management Committee

Office
Room 1513 Arts Tower

Chairman and Program Co-ordinator
D.P. Forcese (*Sociology*)

Program Supervisor
F.K. Hatt (*Sociology*)

Members
T.J. Ryan, *Dean of the Faculty of Social Sciences*
Director, School of Continuing Education, to be
announced
Member, *Arts Faculty Board*
Member, *Social Sciences Faculty Board*
One student.

General Information

This Certificate program is designed primarily for persons employed in the areas of Law enforcement, national security or corrections, who wish to attend university courses. The program is offered in Day and Evening divisions. Candidates for the Certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the Certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require at least nine further courses in addition to those required for the Certificate. At least five of the courses required for a Bachelor of Arts degree must be completed after the awarding of the Certificate.

Admission Requirements

Senior Matriculation, with a 60% overall average, or Mature Matriculation, or Junior Matriculation and three years service in a police force (or equivalent agency). The cases of experienced applicants without Junior Matriculation will be considered on their individual merit and the completion of certain subjects at Carleton may be required before admission as provided by the University's Mature Matriculation policy. Candidates may be admitted with advanced standing but must complete at least five courses for the Certificate at Carleton University.

Course Requirements

The following courses are required:

1. Law 51.234 (Law and Anti-social Behaviour)
2. Sociology 53.255* and 53.256* (Sociology of Deviance, and Police in Society)
3. Political Science 47.200 (Canadian Government and Politics).

The Candidate must, in addition, complete three credits, chosen in consultation with the Program Coordinator, from a list of approved courses.

A Candidate for the Certificate must obtain a grade of C or better in at least one-half of the credits taken at Carleton University for the Certificate.

Students are permitted nine attempts to complete the six-credit program.

Department of Linguistics

Officers of Instruction

Acting Chairman
Jaromira Rakušan

Director, English Language Program
C. Stanley Jones

Professor
William Cowan

Associate Professors
C. Stanley Jones
Jean-Pierre Paillet
Ian Pringle
Janice Yalden

Assistant Professors
Elaine Pressman
Jaromira Rakušan

Instructors
Waltraud O'Brien
Joyce Pagurek
Elizabeth Taborek
Lynne Young

Supervisor, Writing Tutorial Service
Aviva Freedman

General Information

The Department of Linguistics offers courses leading to Major and Honours degrees in Linguistics. The aim of these courses is to provide the student with the theoretical and methodological bases and procedures for the analysis of language and languages, on both the descriptive and historical levels. In addition to the introductory course (Linguistics 29.100), there is a core of half courses dealing with special areas within linguistics, such as historical linguistics, semantics, psycholinguistics, sociolinguistics, language typology, language pedagogy and speech science. Advanced courses deal with phonetics, phonology, grammar, linguistic theory, and applied linguistics.

The Department of Linguistics offers a five-credit program leading to a Certificate in the Teaching of English as a Second Language for those students who already have a degree, in either Linguistics or another subject, or who have extensive experience in teaching. The courses include the theory of teaching English as a second language, an intensive, advanced course in the structure of English, and a range of complementary half-credit courses.

English as a Second Language

For courses in English as a Second Language, see p. 211.

Major Programs

Students Majoring in Linguistics must complete the following courses:

Linguistics 29.100, 29.301*, 29.302*, 29.303*, 29.304*, 29.381*, plus three other credits in Linguistics. In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For Major programs combining Linguistics with another subject students must complete:

Linguistics 29.100, 29.301*, 29.302*, 29.303*, 29.304*, plus one further credit in Linguistics.

Honours Programs

For the Honours degree in Linguistics students must complete:

Linguistics 29.100, 29.301*, 29.302*, 29.303*, 29.304*, 29.381*, plus six other credits in Linguistics (including at least 2½ credits at the 400 level). In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For a Combined Honours degree in Linguistics, students must complete the following courses:

Linguistics 29.100, 29.301*, 29.302*, 29.303*, 29.304*, 29.381*, plus 2½ further course credits in Linguistics (including at least 1½ at the 400 level). In addition, all students must have a working knowledge of a modern language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For Combined Honours in Linguistics and Russian (Translation Option), the following courses are required:

Linguistics 29.100, 29.301*, 29.303*, 29.304*, 29.485, 29.490. (In this program, the Tutorial in Linguistics consists obligatorily of directed readings in the theory of translation.)

Certificate in the Teaching of English as a Second Language

To receive the Certificate in the Teaching of English as a Second Language, students must meet the following requirements:

Linguistics 29.100, 29.420, 29.421*, 29.422*, 29.423*, 29.462*, 29.485. (Part-time students who had already been admitted and had completed some courses towards the Certificate before 1980-81 may, after discussion with the Departmental adviser, elect to complete the Certificate *either* in accordance with the above requirements or in accordance with the earlier requirements, viz. 29.100, 29.420(220), 29.225, 29.285(485), and an approved option.) A candidate for the Certificate must obtain a grade of C or better in all courses taken at Carleton University under the Certificate program. In addition, students in the CTESL Program must be fluent in English, proficiency to be determined by an oral or written test given by the Department.

It should be noted that students cannot receive both a B.A. and a Certificate at the same time, nor can courses included in a B.A. or other degree be credited towards the Certificate. If any of the foregoing Linguistics courses are included in the B.A., then the student must choose other courses in Linguistics in consultation with the Department.

Admission Requirements

Applicants are admitted on the recommendation of the Department of Linguistics. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college. Others with a strong academic background or with experience in the teaching of English as a second language may be admitted with permission of the Department.

Courses Offered

Linguistics 29.100

Introduction to Linguistics

Elementary principles and methods of descriptive analysis of language; phonetics; phonology; morphology; syntax. Survey of other areas of linguistics: historical linguistics, sociolinguistics, psycholinguistics, semantics, applied linguistics.

Day and Evening divisions: Three hours a week.

Linguistics 29.211*

Historical Linguistics

Principles and methods of the historical analysis of languages; the comparative method; internal reconstruction; sound change; rule change; the philological method; problems in historical analysis.

Prerequisite: Linguistics 29.100.

Not offered 1980-81.

Linguistics 29.223*

Theoretical Bases of Applied Linguistics

Theoretical linguistics and psycholinguistics in second language pedagogy. Characteristics of current approaches to language teaching and an examination of relationships between methods and aims.

Prerequisite: Linguistics 29.100.

Not offered 1980-81.

Linguistics 29.232*

Semantics

The study of meaning as a part of the study of communication. Organization of the semantic structure of language, and the relation of this structure to the lexicon.

Prerequisite: Linguistics 29.100.

Day division, Second term: Three hours a week.

Linguistics 29.261*

Psycholinguistics

Language performance and language use; the production and perception of language; psychological processes involved in speech performance; the relevance of these questions to linguistic theory.

Prerequisite: Linguistics 29.100.

Day division, First term: Three hours a week.

Linguistics 29.264*

Speech and Language Problems

An examination of the congenital, developmental and acquired disorders of language, speech and voice; prevalences, types, causes and effects; related research.

Prerequisite: Linguistics 29.261*.

Day division, Second term: Three hours a week.

Linguistics 29.271*

Sociolinguistics

The place of language within society; bilingual and multilingual communities; language, social mobility, and social stratification; sociolinguistic factors in language change.

Prerequisite: Linguistics 29.100.

Not offered 1980-81.

Linguistics 29.272*

Language Typology

The study of language typology as a classificatory device, universalist hypothesis, and areal feature. Methodology in language typology. The theoretical material is based on a survey of the world's languages and language types.

Prerequisite: Linguistics 29.100.

Not offered 1980-81.

Linguistics 29.301*

Phonetics

Recognition, description, transcription and production of speech sounds; systems of transcription; the nature of the speech-producing mechanism; the acoustics of speech sounds. (Also listed as Anthropology 54.301*.)

Prerequisite: Linguistics 29.100.

Evening division, First term: Three hours a week.

Linguistics 29.302*

Phonology

The sound-systems of languages; methods for the analysis and description of phonological structure. The course concentrates on generative theory with comparisons to other theories. (Also listed as Anthropology 54.302*.)

Prerequisite: Linguistics 29.301*.

Evening division, Second term: Three hours a week.

Linguistics 29.303*

Language Analysis

Direction and practice in the analysis of grammatical material, including both morphology and syntax. Models for the description of grammatical regularities. Course work consists principally of practical exercises. (Also listed as Anthropology 54.303*.)

Prerequisite: Linguistics 29.100.

Day division, First term: Three hours a week.

Linguistics 29.304*

Grammatical Theory

Comparison of major current schools of linguistics. Theories of grammatical structure. The testing of grammatical hypotheses. Grammatical structure and meaning. Course work consists principally of lectures and readings. (Also listed as Anthropology 54.304*.)

Prerequisite: Linguistics 29.303*.

Day division, Second term: Three hours a week.

Linguistics 29.381*

Language Structure

Intensive analysis of the linguistic structure of a selected language, the structure of which is not currently being offered elsewhere in the University. This course may be taken for credit twice provided a different language is being studied. Language for 1980-81: Inuktitut (Eskimo).

Prerequisite: Linguistics 29.100.

Day division, Second term: Three hours a week.

Linguistics 29.390

Independent Study

Research under the supervision of a member of the Department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor. No more than one group project is offered in any one year. Normally open only to Third- and Fourth-year students.

Prerequisite: Permission of the Department.

Linguistics 29.391*

Independent Study

Research under the supervision of a member of the Department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor. No more than one group project is offered in any term. Normally available only to Third- and Fourth-year students in Linguistics.

Prerequisite: Permission of the Department.

First term.

Linguistics 29.392*

Independent Study

Research under the supervision of a member of the Department. Projects may be organized on an individual basis, or as a special seminar directed by an instructor.

No more than one group project is offered in any term. Normally available only to Third- and Fourth-year students in Linguistics.

Prerequisite: Permission of the Department.

Second term.

Linguistics 29.401*

Advanced Phonology

A continuation of Linguistics 29.302*. Among topics covered: the methodological problems of phonology, the problems of markedness and natural rules, ordering, abstractness, and other current theoretical developments.

Prerequisite: Linguistics 29.301*, 29.302*, 29.303*, 29.304* or permission of the Department.

Day division, First term: Three hours a week.

Linguistics 29.402*

Advanced Grammar

A continuation of Linguistics 29.304*. Among topics covered: global rules, clause movement, constraints, trace theory, and other current developments in syntactic analysis.

Prerequisite: Linguistics 29.301*, 29.302*, 29.303*, 29.304*, or permission of the Department.

Day division, Second term: Three hours a week.

Linguistics 29.409*

Seminar in Current issues in Linguistics

The investigation of a theoretical issue that is currently the subject of controversy in linguistics, the topic being selected each year by the students and faculty.

Prerequisite: Linguistics 29.301*, 29.302*, 29.303*, 29.304* or permission of the Department.

Day division, First term: Three hours a week.

Linguistics 29.420

Teaching English as a Second Language

Linguistic theory, descriptions of English, and psycholinguistics applied to curriculum design and selection of methods of teaching English to non-native speakers. Tutoring of E.S.L. students.

Prerequisite or corequisite: Linguistics 29.100 and Third- or Fourth-year standing, or full-time enrolment in the C.T.E.S.L. program.

Day division: Three hours a week.

Linguistics 29.421*

Language Testing

The principles of test construction as applied to testing language proficiency, achievement and aptitude. Structural, notional, discrete point and integrative tests are covered. Students are expected to create, analyse and evaluate language tests.

Prerequisite: Linguistics 29.223* or enrolment in the C.T.E.S.L. program.

Day division, First term: Three hours a week.

Linguistics 29.422*

Techniques in Applied Linguistics

Course design, language laboratory materials, inventory of classroom techniques. Teaching reading and writing.

Prerequisite or corequisite: Linguistics 29.223* or enrolment in the C.T.E.S.L. program.

Evening division, Second term: Two hours a week.

Linguistics 29.423*

Analysis of Discourse

Principles of discourse analysis and applications of them in problems in applied linguistics, such as the effect of classroom discourse on second-language learning, and methods for expanding the variety of discourse in a classroom setting. Students are required to observe both actual classroom interaction and videotapes of classroom discourse, and to undertake detailed analyses of such discourse.

Prerequisite: Third- or Fourth-year standing in Linguistics or enrolment in the C.T.E.S.L. program.

Day division, Second term: Three hours a week.

Linguistics 29.461*

Seminar in Experimental Linguistics

Experimental phonetics; the investigation of linguistic performance; the testing of propositions derived from the theory of linguistic competence.

Prerequisite: Linguistics 29.301*, 29.302*, 29.303*, 29.304* or permission of the Department.

Not offered 1980-81.

Linguistics 29.462*

Second Language Acquisition

Current models of second language acquisition and learning with an emphasis on empirical studies. Universals of second language acquisition.

Prerequisite: Linguistics 29.261* or enrolment in the C.T.E.S.L. program.

Day division, First term: Three hours a week.

Linguistics 29.485

Structures of English

An intensive introduction to the structures of the English language, with particular emphasis on syntax; questions of usage and style; an introduction to regional, social and stylistic variation in English and to Canadian English.

Prerequisite: Linguistics 29.100 and Third- or Fourth-year standing, or full-time enrolment in the C.T.E.S.L. program.

Evening division: Three hours a week.

Linguistics 29.490

Tutorial in Linguistics

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Linguistics 29.491*

Tutorial in Linguistics

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

First term.

Linguistics 29.492*

Tutorial in Linguistics

A course designed to permit students to pursue their interests in a selected area of linguistics. The student prepares papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth year-Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Second term.

Courses in English as a Second Language, English Language Program

General Information

The courses are designed to meet the needs of students who are qualified for admission to any faculty but whose native language is not English, and whose scores on the Carleton English Proficiency test or other tests recognized by the University indicate they would encounter serious difficulties in a full academic program. No student who has native or native-like command of English is permitted to take any of these courses.

The intensive course offered at the elementary level concentrates on the development of oral self-expression and comprehension of spoken English. Many students taking this course have a "bookish" knowledge of the language, at a basic level, but can hardly speak or understand when spoken to. All courses at the intermediate and advanced levels give much more emphasis to reading and writing, as the aim of these courses is preparation for university/professional work. In the advanced courses, most of the class time is devoted to developing skill in written English.

Placement in these courses is determined by a one-and-a-half hour test administered by the staff of the ESL unit. No challenges for credit can be made for credit in ESL nor in any other language offered at the university.

English as a Second Language 21.150 and 21.155 cannot *both* be taken for credit, nor can 21.190 and 21.195.

English as a Second Language 21.115

Intensive Elementary English

For students who have little knowledge of English. This level emphasizes reinforcement of oral skills, though the development of reading and writing also receive attention.

Day division, First term and Second term: Fifteen hours a week plus tutorials and laboratory work.

English as a Second Language 21.150

Intermediate English

For students who have acquired a basic knowledge of English structures and some oral fluency. This level concentrates on expanding reading and writing skills at the sentence and paragraph levels. Minimal work in oral production.

Evening division: Three hours a week plus laboratory work.

English as a Second Language 21.155

Intensive Intermediate English

For students who have acquired a basic knowledge of English structures and some oral fluency. This level concentrates on expanding reading and writing skills at the sentence and paragraph levels. Minimal work in oral production.

Day division, First term and Second term: Fifteen hours a week, plus tutorials and laboratory work.

English as a Second Language 21.190

Advanced English

For students with a good command of both oral and written English who wish to further improve their skill, and to prepare for university work. Intensive reading using prepared material. Extensive reading of unedited texts. Frequent compositions and short essays are required. Oral presentations in preparation for seminar work.

Evening division: Three hours a week, plus laboratory work.

English as a Second Language 21.195

Intensive Advanced English

For students with a good command of both oral and written English who wish to further improve their skill, and to prepare for university work. Intensive reading using prepared material. Extensive reading of unedited texts. Frequent compositions and short essays are required. Oral presentations in preparation for seminar work.

Day division, First term and Second term: Fifteen hours a week, plus tutorials and laboratory work.

English as a Second Language 21.196*

Advanced Writing for English as a Second Language

A course designed to improve the writing skills of students whose native language is not English. Special attention will be given to the particular types of writing required of students in a university. Students are expected to complete regular and frequent writing assignments. The course is intended for students

whose speaking, listening and reading skills are already at a university level and for those enrolled concurrently in E.S.L. 21.195.

Day division, Second term: Three hours a week.

School of Commerce

For details of the programs offered by the School see pp. 95-99.

Courses Offered

■ Finance

Management Studies 42.250*

Introduction to Business Finance

A study of business firms' financing, capital investment and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Economics 43.250*.)

Prerequisites: Economics 43.100 and Accounting 41.100 or Accounting 41.101*, and 41.102*.

Day and Evening divisions, First and Second terms: Lectures three hours a week.

Management Studies 42.406*

Corporate Finance

An examination of some of the major theoretical issues in corporate finance as well as an examination of certain applied financial management techniques. Topics include: introduction to portfolio theory and the capital asset pricing model, cost of capital, capital structure and dividend policy, capital budgeting under uncertainty, lease financing, mergers and consolidations. (Also listed as Economics 43.406*.)

Prerequisites: Economics 43.200 or 43.201*, 43.220 and Management Studies 42.250*.

Day and Evening divisions, First and Second terms: Lectures two hours a week.

Management Studies 42.410*

Finance and Capital Markets

The workings and structure of Canada's capital markets with particular reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Economics 43.410*.)

Prerequisite: Economics 43.210 or 43.211*.

Day division, First term and Evening division, Second term: Lectures and seminars three hours a week.

Management Studies 42.411*¹

Investments

A survey of modern methods of investment analysis with a significant analytical flavour. Topics include: money and capital markets, security valuation, port-

folio analysis and capital market efficiency. (Also listed as Economics 43.411*.)

Prerequisite: Management Studies 42.406* (Economics 43.406*); may be taken concurrently.

Day division, Second term: Lectures and seminars two hours a week.

■ Personnel Administration

Management Studies 42.312*

Personnel Management

An examination of the personnel management function in large formal organizations, with emphasis on the private sector. Topics include manpower planning, recruitment, selection, performance evaluation, career development and training, compensation and benefits, and the role of the professional personnel manager.

Prerequisite: Management Studies 42.311*.

Evening division, First term.

Management Studies 42.357*

Introduction to Industrial Relations

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Economics 43.357*.)

Prerequisite: Economics 43.100.

Day and Evening divisions, First and Second terms: Lectures three hours a week.

■ Management and Business Systems

Management Studies 42.290*

An Introduction to Business Information Systems

This course develops an understanding of computer technology as it applies to business. The course describes various hardware and software technologies in terms of their impact on business systems. Typical computer applications are discussed to illustrate how the computer may be used in a business environment. Methods for specifying and implementing business information systems are introduced. (Also listed as Computer Science 95.290*.)

Prerequisites: Computer Science 95.104* or 95.204* and Accounting 41.100 (or 41.101* and 41.102*.)

Day and Evening divisions, First and Second terms: Lectures three hours a week.

Management Studies 42.291*

Quantitative Applications of Computers in Business

This course introduces the computer as a problem-solving tool in business. The interactive language APL and various program packages such as SPSS are used to solve problems in finance, marketing and accounting. Typical areas from which problems are selected are: questionnaire processing, time series analysis, budgeting, PERT/CPM, decision trees, portfolio analysis, inventory control and simulation. (Also listed as Computer Science 95.291*.)

Prerequisites: Computer Science 95.101*, 95.104*, or 95.105*; Economics 43.220 or Mathematics 69.257* and Management Studies 42.250*. (The latter two may be taken concurrently with Management Studies 42.291*.)

Day division, First term: Lectures three hours a week.

Management Studies 42.391*

Business Data Processing Systems

The purpose of this course is to develop the skills necessary to participate in the construction of business data processing systems. Computer Science and non-Computer Science students will form project teams to design and implement a particular system. Lectures are based on case studies and seminars. Student projects will be drawn, where possible, from actual problem areas in the business community. Typical projects include: inventory control, payroll, general ledger, project cost/accounting, simulation, information retrieval, computer auditing. (Also listed as Computer Science 95.391*.)

Prerequisites: Management Studies 42.290* or Computer Science 95.310* or permission of the School of Commerce.

Day division, Second term: Lectures three hours a week.

■ Marketing

Management Studies 42.208*

An Introduction to Marketing

An overview of the marketing function within the firm is sought. Promotion, product design, pricing and distribution channels are examined as key elements of the marketing mix. Consumer buyer behaviour, trends in retailing, wholesaling, sales force management and marketing research are other topics to be reviewed. Case studies are used to supplement class and reading material.

Prerequisites: Accounting 41.100, Economics 43.100, and Psychology 49.100 or Sociology 53.100, or permission of the School of Commerce.

Day and Evening divisions, First and Second terms: Lectures three hours a week.

Management Studies 42.315*

Marketing Communications

Study of promotion as a communication process and a tool of marketing management. The course examines the planning of a promotional campaign, including budget development, consumer research in promotion, creative strategy, media strategy, non-product promotion, ethical issues and evaluating the effectiveness of promotional programs.

Prerequisite: Management Studies 42.208*.

Day division: Second term.

Management Studies 42.416

Consumer Behaviour

The traditional socio-psychological theories of consumer behaviour are examined. Stress is put on the

current literature and on the fundamental theories and concepts from various disciplines. Topics include: motivation, personality, perception, learning, communication of innovations, attitude theory, role theory, life style analysis, consumerism, etc.

Prerequisite: Management Studies 42.208* or permission of the School of Commerce.

Day division: Lectures and seminars two hours a week.

Management Studies 42.417*

Marketing Research

This first course in marketing research covers such topics as: research design, questionnaire design, scales, sources of information and error, sampling techniques, basic statistical measures, measures of association, regression, and an overview of multivariate methods. The pragmatic implications of marketing research are stressed, with the use of case studies and actual data analysis.

Prerequisites: Management Studies 42.208*, Economics 43.220 or permission of the School of Commerce.

Day division, First term: Lectures three hours a week.

Management Studies 42.418*

Marketing Management

This course emphasizes the "managerial" aspects of marketing. Such topics as: market segmentation, social and regulatory aspects in marketing, channels of distribution, industrial marketing, sales force management and other current topics are discussed in detail.

Prerequisite: Management Studies 42.208* or permission of the School of Commerce.

Day division, Second term.

■ Organizational Behaviour and Management

Management Studies 42.310*

Introduction to Administrative Processes

This course introduces students to the managerial role and studies the tools available to managers and the context in which management is practised. Topics covered include the history of management theory, the nature of managerial work, the relation of individuals to their work, organization structure, authority, organizational goals and control, planning, decision making and the implementation of plans.

Prerequisites: Sociology 53.100 or Psychology 49.100 and Economics 43.100 or permission of the School of Commerce.

Day and Evening divisions, First term.

Management Studies 42.311*

Introduction to Organizational Behaviour

This course introduces students to the human behaviour aspects of organizations. It covers the phenomena of communications, leadership, conflict and change at the individual, group and organizational level.

Prerequisites: Management Studies 42.310*.

Day and Evening divisions, Second term.

Management Studies 42.480***Applied Organization Theory**

The focus is on the organization as a unit of analysis. Organizations, particularly business organizations, are analysed from the point of view of modern administrative theory. The course emphasizes management applications of various theories of organization (for example decision, control, contingency, institutional, and modern variants of human relations theory). Analysis may utilize the traditional business case approach and/or field projects. Students learn to apply the theories in the context of the management process. Prerequisites: Management Studies 42.311* and Fourth-year Honours Commerce standing or permission of the School of Commerce. Day division, First term.

Management Studies 42.490***Business Policy Seminar**

This course focuses upon the management process in business. It examines the functions and responsibilities of managers in the areas of strategy formulation and implementation. It is designed to integrate previous work in the functional disciplines of business administration by developing an overall analytical viewpoint.

Prerequisite: Fourth-year Honours Commerce standing.

Day division, Second term: Two hours a week.

■ Production**Management Studies 42.307* (42.407*)****Applied Economics: Production**

An examination of the decision rules for planning production, work force, inventory and for optimal response to sales fluctuations.

Prerequisites: Economics 43.200 or 43.201*, and 43.220. Economics 43.220 may be taken concurrently. Evening division, Second term: Lectures two hours a week.

■ Quantitative Methods**Management Studies 42.404*****Operations Research I**

Linear programming, networks, and such techniques as PERT (Program Evaluation and Review Technique) and CPM (Critical Path Method). (Also listed as Economics 43.404*.)

Prerequisites: Mathematics 69.107*, and 69.117* or 69.127*.

Evening division, First term: Lectures three hours a week.

Management Studies 42.405***Operations Research II**

Dynamic programming inventory models, queuing, simulation, non-linear programming. (Also listed as Economics 43.405*.)

Prerequisites: Management Studies 42.404* or equivalent and Economics 43.220.

Evening division, Second term: Lectures three hours a week.

Management Studies 42.409**Statistical Decision Theory**

An examination of Bayesian and classical approaches to decision making under uncertainty for individuals and firms. (Also listed as Economics 43.409.)

Prerequisites: Economics 43.220 and Mathematics 69.107*, and 69.117* or 69.127*.

Not offered 1980-81.

■ Selected Studies**Management Studies 42.360*****Small Business Management**

This course deals with the socio-economic functions and activities of the owner-manager entrepreneur and examines the operations and nature of small businesses. Methods and models which are useful in the analysis of a small business enterprise are employed. Prerequisites: Management Studies 42.208* and 42.250*.

Not offered 1980-81.

Management Studies 42.361***Business and its Environment**

This course provides an integrative macro-perspective of dynamic conditions which influence Canadian business, its organization, management and operations. Environmental forces studied include consumerism and other social groups, technological developments, economic conditions, politico-governmental actions and legislation as well as such contemporary issues as ecology and pollution, "the Conserver Society" and national policies and strategies for food, energy and housing. Business in its environment is studied as a system.

Prerequisites: Economics 43.100 and Sociology 53.100 or Psychology 49.100.

Not offered 1980-81.

Management Studies 42.460***Topics in Management Studies**

Consideration of selected topics in financial management, marketing production, etc.

Prerequisite: Permission of the School of Commerce. Day division, One term: Two hours a week.

Management Studies 42.492**Directed Studies**

This course is intended to provide students with the opportunity of carrying out a major research project under the supervision of a faculty member.

Prerequisite: Permission of the School of Commerce.

Courses Planned for Summer School and Evening Division

Summer School

The following courses is offered each Summer:
Management Studies 42.250*.

Evening Division

Core courses in Management Studies are available each year in the Evening division. These include Management Studies 42.208*, 42.250*, 42.290*, 42.310*, 42.311* and 42.357* (43.357*).

Offerings of optional courses are subject to the availability of instructors.

Bachelor of Arts Programs

The Department of Mathematics and Statistics (Faculty of Science) offers a wide variety of programs leading to the Bachelor of Arts Major and Honours degrees, as well as Bachelor of Science degrees. The following is a list and short description of types of programs available:

1. Mathematics

The B.A. Major programs emphasize methods and applications whereas the B.A. Honours programs emphasize theoretical aspects and serve as an introduction to graduate studies. The main areas of concentration are Algebra, Analysis, Topology, Applied Mathematics (classical and modern), Statistics and Probability. Of particular interest in this category are the range of combined Major and Honours programs such as:

Economics and Mathematics
Mathematics and Philosophy
German and Mathematics
Geography and Mathematics

It is in fact possible to combine studies in Mathematics with almost any other department in Arts and Social Sciences, subject to the approval of the course selections by the Departments.

2. Mathematical Sciences

The B.A. programs in Mathematics and Computer Science are designed for students who wish to prepare themselves for careers in government, industry, management, systems analysis, and related fields which employ mathematicians. There are three streams available in both Major and Honours, namely:

Computer Mathematics
Statistics
Dynamical Systems

One stream is available in the Honours only:

Operations Research and Stochastic Processes.

In addition to these, there is a combined program in Mathematical Sciences and Computer Science leading to the B.A. Major or Honours degrees, and a program leading to a B.A. Honours degree in Operations Research.

Students wishing more details on these or the programs offered through the Faculty of Science should consult pp. 394-414. For further information contact the Assistant Chairman for Undergraduate Studies at 231-2610.

Department of Music

Officers of Instruction

Chairman

David Piper

Associate Chairman

Bryan Gillingham

Professor

John Churchill

Associate Professors

Alan Gillmor

David Piper

Assistant Professors

Patrick Cardy

Bryan Gillingham

Elaine Keillor

Adjunct Professors

Helmut Kallmann (*National Library of Canada*)

Brian Tansley (*Department of Psychology*)

Sessional Lecturers

Ann Schau

Donald Wallace

Demonstrators

Jewell Couch

David Johnstone

Jean Trevelyan

Instrumental and Vocal Instructors

Susan Baskin (*flute*)

Donald Beecher (*viol*)

Donald Bell (*voice*)

James Brough (*piano*)

Glen Carruthers (*piano*)

Sandra Cooke (*piano*)

Gerald Corey (*recorder*)

Jewell Couch (*piano*)

John Dykes (*guitar*)

Anna Feldman (*recorder*)

Barbara Gaizauskas (*recorder*)

Godfrey Hewitt (*organ*)

Winston Hooper (*voice*)

Verna Jacobson (*piano*)

David Johnstone (*guitar*)

Roy MacDonald (*trumpet*)

Joan Milkson (*violin*)

Cathy Rollins (*flute*)

Barbara Ross (*voice*)

Ann Schau (*piano*)

David Shore (*guitar*)

Lydia Sierhuis (*piano*)

Virginia Strawn (*piano*)

Jean Trevelyan (*piano*)

Mary Wegg (*clarinet*)

Irene Woodburn-Wright (*piano*)

General Information

The Department offers courses leading to both Major and Honours degrees in Music. The purpose of these courses is not principally to train students in the performing aspects of the subject (although half courses are given in applied music for Honours and Majors as adjuncts to academic study) but rather to promote an intellectual and aesthetic understanding of music as an expression of human cultural activity. The study of music history and of the techniques and materials of music creation will form the basis of all study. All students will be encouraged to examine the meanings and motivations of the art and to develop their speculative and critical responses to it in both historical and contemporary contexts.

In addition to its undergraduate programs, the Department offers courses in the history of Canadian music at the graduate level in co-operation with the Institute of Canadian Studies.

The Department also sponsors a variety of performing groups including *Carleton Madrigal Singers*, *Carleton Medieval Consort*, *Carleton Renaissance Consort*, *Carleton Viol Consort*, and *Twentieth-Century Group*. These are open to all Carleton students and members of the community, and Music Major and Honours students are required to belong to at least one of them. In addition, the Department sponsors a variety of weekly concerts and occasional guest lectures which are considered necessary non-credit activity for all Music students.

Major Programs (B.A.)

1. The Major program in Music normally consists of a minimum of seven and a half full-course credits in Music as follows:

(a) Music 30.150 and Music 30.190* to be taken during the First year;

(b) Courses totalling four full credits at the 200 level, normally to be completed by the end of the Second year, which must be chosen from 30.210* and above;

(c) The remaining two credits to be chosen from the 300 level.

2. It is also expected that some work will be taken in related disciplines, for example: Art History, Classics, Computer Science, English, History, Languages (French, German, Italian, Latin), Mathematics, Philosophy, Physics.

3. Music Major students are required to attain a grade of at least C- in Music 30.150.

Combined Majors

For Major programs combining Music with another subject the general rule is that they must include at least four full-course credits in Music, of which two must be at the 200 level (30.210* or above) and one at the 300 level. Combined Majors are not eligible for Performance courses.

Honours in Music (B.Mus.)

1. The Honours program in Music normally consists of a minimum of eleven full-course credits in Music as follows:

- (a) Music 30.150 and Music 30.190* to be taken during the First year;
- (b) Music 30.250 and Music 30.290* to be taken during the Second year;
- (c) Music 30.210*, 30.211*, 30.212*, 30.213*, 30.214*, 30.215* and 30.216* are to be completed by the end of the Third year;
- (d) In addition, four and one half more credits in Music are to be taken, which must include Music 30.350 and Music 30.390* and 30.490* (normally taken in the Third and Fourth years respectively) and either Music 30.460 or Music 30.498 (each of which carries double weight in assessing the class of degree awarded).

Note:

Performance courses are required as an adjunct to academic study and as a means of furthering general musical growth. Normally, the Honours student is required to elect performance courses in each year of residence at Carleton.

2. At the end of the Fourth year all Honours students must satisfy the following requirements:

- (a) A written comprehensive examination;
- (b) A *viva voce* examination;
- (c) A short recital.

3. Honours students will also normally be required:

- (a) To pass, by the end of the Third year, a reading examination in either French, German, Latin or Italian; (either French 20.102 or 20.103, and German 22.115, Latin 16.115, Italian 26.115, Spanish 38.115 and Russian 36.100 will be accepted in lieu of this examination);
- (b) To undertake work in related disciplines.

4. Music Honours students are required to attain a grade of at least C- in Music 30.150 and Music 30.250.

Combined Honours Programs (B.A. Hons.)

Students who wish to propose a Combined Honours program must consult the Department. Normally they will be required to take six credits which must include either Music 30.460 or 30.498 and at least two credits at the 200 level (30.210* or above) and two credits at the 300 level. Students in the Combined Honours program are not eligible for the Performance courses.

Diploma in Music

This program is designed to attract individuals who have a strong background in performance on a musical instrument or voice, have been involved in the teaching of music, and who are desirous of obtaining additional academic qualifications. The program consists of five credits as listed below plus a graduating recital approximately thirty minutes in length. This recital is conducted on a pass/fail basis and will include *viva voce* questions related to the diploma requirements.

Courses taken for the Diploma are normally creditable towards a Bachelor of Arts or Bachelor of Music degree and a transfer student from the Diploma program into a degree program will normally be required to take at least ten (or, in the case of B.Mus., fifteen) further credits in addition to those required by the Diploma.

If a student already holds a degree in music such a student must take for the Diploma five credits other than those already completed. Permission of the Department is required for the choice of these five credits.

Admission Requirements

Applicants will be admitted on the basis of an audition to be held in the spring of each year. Although normal admission requirements are senior matriculation and an adequate level of performance, special consideration will be extended to other applicants under mature matriculation regulations.

Course Requirements

1. One Music Theory credit (normally Music 30.150);
2. Two Music History credits (normally Music 30.100) plus one full credit at the 200 level to be chosen from Music 30.210* and above);
3. One full credit in Music Performance (30.495). Prospective candidates should consult the Department about possible exemption from this requirement through Carleton's "Challenge for Credit" policy.
4. One full credit Music elective (to be chosen in consultation with the Department);
5. A recital of approximately thirty minutes duration plus a *viva voce* examination on aspects of the course. This requirement is conducted entirely on a pass/fail basis and no grade is awarded.

Candidates are normally required to complete all of these at Carleton University.

Academic Standing

A candidate for the Diploma must obtain a grade of C+ or better in at least four of the five required courses.

Courses Offered

Note:

The following upper-class courses are open to Non-Majors as well as Majors; although some theoretical musical knowledge may be helpful, it is not essential: Music 30.210*, 30.211*, 30.212*, 30.213*, 30.214*, 30.215*, 30.216*, 30.310*, 30.311*, 30.312*, 30.313*, 30.315, 30.340*, 30.341*.

Music 30.100

Introduction to the Music of Western Civilization

This course provides a general perspective of music history and literature from the Middle Ages to the present within the context of Western Civilization. It includes a consideration of main trends and significant personalities with emphasis on the listening experience itself.

Day division: Lectures three hours a week.

P. Cardy, A. Gillmor

Music 30.115

Elementary Materials of Music

A course for those who, although interested in the theory of music, have had no opportunity to study it systematically. Rudiments, elementary harmony and basics of melodic writing are taught in the theoretical part of the course. There is also practical study on piano or guitar as well as aural training and elementary musical dictation. The emphasis throughout is on analytical listening. This course is not accepted, even as an option, toward the requirements of a Major or Honours degree in Music.

Evening division: Lectures two hours a week plus seminars.

A. Schau

Music 30.150

Materials and Techniques of Music I

A theoretical and practical study of rhythm, melody, harmony, counterpoint and structures through the style of the baroque and early classical periods. Aural training, keyboard harmony and the writing of music are studied.

Prerequisite: Some keyboard facility (or facility in the classical guitar may be considered) and permission of the Department.

Day division: Lectures two and a half hours a week plus seminars.

Music 30.190*

Performance I⁽¹⁾

Vocal or instrumental instruction for Music Majors and Honours students only. A reasonable standard of achievement is demanded on entry and every prospective student is required to attend an audition conducted by the Department before being admitted. There is a further audition before a student may proceed to Music 30.290*.

Individual tuition, one half hour a week.

Music 30.195*

Performance I⁽²⁾

Instruction for Music Majors and Honours students only, in a second instrument of their choice. There is an audition before a student may proceed to continue this study in Music 30.295*.

Individual tuition, one half hour a week.

Music 30.210*

Music in the Middle Ages

A survey of European music from the beginning of the Christian era to the end of the fourteenth century, including the study of secular monophony, liturgical music and medieval polyphony.

Day division: Lectures three hours a week.

B. Gillingham

Music 30.211*

Music in the Renaissance

The development of vocal and instrumental music from 1400 to 1600, including examination of the important works by the Masters of the Burgundian and Flemish schools, of Roman and Protestant church music, of the Italian madrigal, the French chanson and Elizabethan music.

Day division: Lectures three hours a week.

B. Gillingham

Music 30.212*

Music in the Baroque Era

A survey of European music and its environment from approximately 1600 to the deaths of Bach and Handel. Topics include: Secular vocal music; solo and concerted instrumental music; music for the Catholic and Protestant churches; the music and significance of major personalities from Monteverdi and Schuetz to Bach and Handel.

Not offered 1980-81.

Music 30.213*

Music in the Classical Era

A study of European music from the early eighteenth century to the beginning of Romanticism. The evolution of the Classical style is traced in the important works of composers from the 1720s to the Viennese school of Haydn, Mozart and Beethoven.

Evening division: Lectures three hours a week.

E. Keillor

Music 30.214*

Music in the Romantic Era

A survey of Western music from the age of Beethoven to the late nineteenth century. Important genres (opera, art-song, symphony and symphonic poem) as well as individual and national styles are examined in the context of the socio-political climate of the period. Not offered 1980-81.

Music 30.215*

Twentieth-Century Music to World War II

Music from *Tristan und Isolde* to circa 1945, including an examination of modern idioms from Debussyan

mpressionism to Viennese expressionism, nationalism, and Stravinskian neoclassicism.
Not offered 1980-81.

Music 30.216*

Music Since World War II

A study of selected aspects of the musical avant-garde in the Western classical tradition since circa 1945, including post-Webern serialism, colouristic and textural composition, music of political commitment, *musique concrète* and *elektronische Musik*, synthesizer/computer/tape music, musical theatre, process music, and the music of chance.

Day division: Lectures three hours a week.

J. Piper

Music 30.250

Materials and Techniques of Music II

A continuation of Music 30.150. The study progresses to more complicated and advanced stages involving the study of styles from European modal writing to twentieth-century idioms. Keyboard harmony, aural dictation and written work form the basis of the study. Prerequisite: Music 30.150 with a grade of at least C- or permission of the Department.

Day division: Lectures two and a half hours a week plus seminars.

Churchill

Music 30.290*

Performance II⁽¹⁾

A continuation of Music 30.190* for Music Majors and honours students only. An audition is necessary before a student may proceed to Music 30.390*. Individual tuition, one half hour a week.

Music 30.295*

Performance II⁽²⁾

A continuation of Music 30.195* for Music Majors and honours students only. Individual tuition, one half hour a week.

Music 30.310*

Music In Canada 1600-1900

An historical survey of musical life in Canada from 1600 to 1900. Topics include: music in New France; French-Canadian folksong; Indian traditional song and dance; musical life in the nineteenth century; popular music in Canada; early composers; music in performance; etc.

Evening division: Lectures three hours a week.

F. Keillor

Music 30.311*

Canadian Music in the Twentieth Century

A study of Canadian composition in the twentieth century with special reference to post-1945 developments. Evening division: Lectures three hours a week.

F. Keillor

Music 30.312*

American Music 1620-1920

An historical survey of American music from Puritan New England to the Boston Classicists. The evolution of American music is traced through the sacred and secular music of the seventeenth and eighteenth centuries and the cultivated and vernacular traditions of the period circa 1820-1920.

Not offered 1980-81.

Music 30.313*

American Music in the Twentieth Century

An historical survey of American music since circa 1920, including an examination of the works of the American nationalists, Gershwin and the third stream, lves and the experimentalists, blues and jazz, and post-1945 developments in serialism, electronic music, and indeterminacy.

Day division: Lectures three hours a week.

A. Gillmor

Music 30.314*

A History of the Madrigal

A study of the development of the madrigal and its social milieu from its earliest stages to the middle of the seventeenth century through a detailed examination of selected works from the Italian and English schools.

Prerequisite: Music 30.211*.

Day division: Lectures three hours a week.

B. Gillingham

Music 30.315

Music Cultures of the World (Elementary Ethnomusicology)

A comparative and analytical study of music in non-literate, folk, and Asian high cultures, through an examination of musical instruments, theoretical systems, and the role of music in society.

Not offered 1980-81.

Music 30.320* to 30.329*

Specialized Studies in Selected Topics

The topics are designed to reflect faculty research interests and have included such areas as: the piano concertos of Mozart; the Beethoven piano sonatas; the piano music of Schumann; formal processes in the music of Stockhausen; the classical string quartet; and computer music. Half courses may be offered in either the First or Second term and students should consult the Department for further details concerning course content.

The Specialized Topics for 1980-81 are:

Music 30.320*

Music and Its Relation to Futurism, Cubism, Dadalism, and Surrealism

Prerequisite: Permission of the Department.

Day division, first term: Seminar two hours a week.

A. Gillmor

Music 30.321*

Music and the Brain

Prerequisite: Permission of the Department.

Evening division, Second term: Seminar two hours a week.

B. Tansley (Department of Psychology)

Music 30.327*

Introduction to Computer Music

Prerequisite: Permission of the Department.

Evening division, First term: Lectures three hours a week.

D. Wallace

Music 30.329*

Computer Systems

Prerequisite: Permission of the Department.

Evening division, Second term: Lectures three hours a week.

D. Wallace

Music 30.330*

Notation of Medieval and Renaissance Music

An introduction to the notation of medieval and renaissance music with emphasis on the major paleographic and transcriptional problems to be encountered in early chant notation, square and Franconian notations, the innovations of the Ars Nova and mannerist phases, white notation, and various lute tablatures. Examples are selected, for detailed study and transcription, from the ninth to sixteenth centuries. Prerequisite: Music 30.210* or permission of the Department.

Day division: Lectures three hours a week.

B. Gillingham

Music 30.331*

Twentieth-Century Musical Notation

A seminar in twentieth-century notation, considering the modification of existing systems to accommodate new compositional and performance practices and the development of new systems. Topics discussed include the psychology of notation, information theory in music, classification systems, graphic notation, indeterminate scores and calligraphic techniques.

Not offered 1980-81.

Music 30.340*

A History of Opera before 1800

A survey of the development of opera from the beginnings to about 1800. The course deals with the major monuments of Italian, French, German, and English opera, by such composers as Monteverdi, Cavalli, Scarlatti, Purcell, Lully, Gluck, Rameau, Mozart and others.

Not offered 1980-81.

Music 30.341*

A History of Opera from 1800 to the Present

A study of the modern operatic tradition from approximately 1800 to the present day, including such topics

as German romantic opera, French grand opera, Italian lyricism and verismo, Russian realism and German expressionism, Brecht, Weill and Marxism, Britten and the English school.

Day division: Lectures three hours a week.

A. Gillmor

Music 30.350

Materials and Techniques of Music III

In part a continuation of Music 30.250 and a specialized course for students who wish to study the theory of music in some depth, possibly as preparation for post-graduate work.

Prerequisite: Music 30.250 with a grade of at least C- or permission of the Department.

Not offered 1980-81.

Music 30.355

Stylistic and Structural Analysis

A study of traditional techniques of musical structure and their application in historical and contemporary styles.

Prerequisite: Music 30.150, some or all of 30.210* to 30.216*, or permission of the Department.

Not offered 1980-81.

Music 30.360

Composition

A course for students who possess an aptitude for composition and wish to study basic compositional techniques and their application through the writing of original music.

Prerequisite: Permission of the Department.

Day division.

P. Cardy, D. Piper

Music 30.361

Orchestration

A study of the instruments of the orchestra, their historical background, ranges and technical abilities, as well as work in the development of fluency in score reading and analysis. Students apply the techniques studied to the preparation of assignments involving the orchestration, for various small and large ensembles, of works from a variety of historical periods.

Prerequisite: Permission of the Department.

Day division: Lectures three hours a week.

P. Cardy

Music 30.362

Electronic Music Studio Techniques

A course designed primarily as a practical study of electronic music studio techniques for the purpose of acquiring basic skills necessary for composition in the electronic medium. Students are also encouraged to acquire special insight into the problems of composition in this medium through the creation of several short exercises and, in seminar, through critical discussion and evaluation of each other's work. Seminar group and studio supervision, plus private

studio time. Enrolment for this course is limited.

Prerequisite: Permission of the Department.

Day division: Seminar two hours a week.

D. Piper

Music 30.390*

Performance III⁽¹⁾

A continuation of Music 30.290* for Music Majors and Honours students only. An audition is necessary before a student may proceed to Music 30.490*.

Individual tuition, one half hour a week.

Music 30.450

Materials and Techniques of Music IV

A continuation of Music 30.350 proceeding to the writing of extended works in a variety of idioms from the early Renaissance to the twentieth century. The emphasis is less on the production of original compositions than on the study of stylistic compositional techniques through analysis and pastiche writing. A measure of continuo realization and editorial procedures is included.

Prerequisite: Music 30.350 with a grade of at least C- or permission of the Department.

Day division: Tutorials two hours a week.

J. Churchill

Music 30.455

Advanced Analysis

A continuation of Music 30.355 to include an in-depth analysis of a small number of selected works chosen from some or all of the major historical periods from the Middle Ages to the contemporary avant-garde.

Not offered 1980-81.

Music 30.460

Advanced Composition

This course is designed for students with a displayed aptitude for composition, and centres around the writing of original work, some of which must be prepared for performance. Students are required to produce several works for either instrumental/vocal or electronic media or both. In addition to the preparation of original work, seminar groups are held during which music by established composers of diverse styles and techniques is studied and critical discussion of each student's work-in-progress is encouraged.

Seminar and individual supervision, plus private time in the electronic music studio as required. For students wishing to use the electronic music studio facilities, enrolment may have to be limited.

It is the duty of the student to contact the instructor before enrolling in this course.

Prerequisite: Music 30.360; in addition some or all of Music 30.350, 30.355, 30.361, and 30.362, though not specifically required, are highly recommended.

Day division.

P. Cardy

Music 39.490*

Performance IV⁽¹⁾

A continuation of Music 30.390* for Honours students only. A final audition in the form of a short prepared recital is required.

Individual tuition, one half hour a week.

Music 30.495

Performance (Diploma in Music)

A full course in performance designed exclusively for Diploma in Music candidates.

Music 30.498

Honours Essay in Musicology

An Honours research essay of approximately fifty pages in length on a topic chosen in consultation with the Department and an assigned supervisor. A high level of personal research and subsequent presentation is required. This course carries double weight.

Music 30.510 and Music 30.511* and 30.512*

Graduate Studies in Canadian Music

See Graduate Studies and Research Calendar.

Department of Philosophy

Officers of Instruction

Chairman

B. Wand

Majors Adviser

J. Wolfe

Honours Adviser

John W. Leyden

Professors

Bernard Wand

J.C.S. Wernham

Associate Professors

J.A. Brook

Andrew Jeffrey

Randal R.A. Marlin

J.T. O'Manique

Stephen Talmage

James M. Thompson

J. Wolfe

Assistant Professors

Stanley G. Clarke

D.E. Dubrule

B.I. Egyed

Marvin Glass

John W. Leyden

Courses Open to First Year Students

The following full-credit courses are open to First-year students: Philosophy 32.100, 32.110, 32.120 and 32.150. The following half-credit courses are open to First-year students: in the First term Philosophy 32.102* and 32.106*; in the Second term Philosophy 32.102* and 32.109*. Credit will not be given for more than two full-credit courses or the equivalent at the 100 level.

Major Program

Majors in Philosophy will present a minimum of six full credits in Philosophy including five full credits beyond the 100 level.

These full credits must be chosen to include one of Philosophy 32.205, 32.215, 32.225, 32.305; one of Philosophy 32.251* and 32.252*, 32.280, 32.335, 32.380; and one of Philosophy 32.211* and 32.212*, 32.240, 32.330.

Special arrangements will be made for students proposing a Combined Major program. The normal requirement in Philosophy is five courses, including four beyond the 100 level.

All Majors and Combined Majors will arrange their programs in consultation with the Department.

Students who enter the Major program before the end of First year may not continue in it unless, before the beginning of Second year, they have obtained a grade of C- or better in one of the introductory courses in Philosophy. Students may not enter the Major program at the end of First year or later, unless they have obtained a grade of C- or better in one of the introductory courses in Philosophy, or a grade of B- or better in Humanities 10.100.

Honours Program

The Honours program may be entered at the beginning of the First year or by transfer from the Major course (p. 91). Students intending to enter the Honours program should include 1.0 full credit in Philosophy at the 100 level in the First-year program. In certain circumstances this requirement will be waived for students entering the Honours or Combined Honours program after the First year, who may be permitted to substitute an upper year course in Philosophy.

The Honours program will consist of a minimum of 20.0 full credits. Of these at least 9.0 full credits, including 8.0 full credits beyond the 100 level, will be courses in Philosophy. The program for the Second and subsequent years will be planned in consultation with the Department. The following courses are required:

1. One of Philosophy 32.205, 32.225, 32.270, 32.305, 32.380;
2. Either 32.211* and 32.212* or 32.300;
3. 32.215;
4. 32.335;
5. Either 32.251* and 32.252* or 32.380;
6. 32.306* (if 32.305 not taken under 1);
7. 2.0 full credits at the 400 or 500 level.

Combined Honours Programs

Combined Honours programs are available in Philosophy with the following subjects: Art History, English, History, Law, Political Science, Greek, Economics, French, German, Mathematics, Psychology, Religion and Sociology-Anthropology. Special arrangements may be made for other combinations.

The Philosophy requirements are 7.0 full credits, to include six beyond the First-year level including 1.0 full credit at the 400 or 500 level. Details of these programs may be obtained from the Department.

Graduate Program

The Department of Philosophy offers studies leading to the degree of Master of Arts. For information see the Graduate Studies and Research Calendar.

Courses Offered

Philosophy 32.100

Themes in the History of Philosophy

This course is designed to familiarize the student with philosophical issues through historically influential writings. The development of a number of themes is traced through the texts of major philosophers in the Western tradition. Among these themes are the nature and extent of human knowledge, the validity of religious beliefs and moral values, the nature and destiny of man and the purpose and importance of philosophical thinking.

Day division: Lectures and discussion three hours a week.

S.G. Clarke, D.E. Dubrule

Philosophy 32.101*

Ethics and Philosophy of Religion

An examination of arguments for and against the existence of God; the nature of religious language and the meaning and justification of moral judgments. Not offered 1980-81.

Philosophy 32.102*

Knowledge and Meaning

The justification of our belief in an external world and in the possibility of predicting the future, the nature of knowledge and of ultimate reality, the nature of language and the meaning of "meaning".

Day division, First term: Lectures and discussion three hours a week.

A. Jeffrey

Philosophy 32.103*

Philosophical Texts I

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Plato, *The Republic* and Descartes, *Meditations*. Not offered 1980-81.

Philosophy 32.106*

Metaphysics and Truth

A discussion of the following questions: how mind is related to body; what freedom is and whether it is possible; what truth is and how philosophical truths differ from truths of science.

Day division, First term: Lectures and discussion three hours a week.

J.A. Brook

Philosophy 32.107*

Philosophical Texts II

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Hume, *An Enquiry Concerning Human Understanding*; Ayer, *Language, Truth and Logic*. Not offered 1980-81.

Philosophy 32.108*

The Problem of Value

A critical examination of the ways in which evaluations may be made in the conduct of human life. Can we justifiably distinguish between actions as right or wrong? Can we impartially assess some societies as preferable to others? Can we give acceptable reasons for claiming that one work of art is better than another? Not offered 1980-81.

Philosophy 32.109*

The Philosophy of Economic Activity

An examination of economic activity as it relates to the principles of social organization, moral rules and religious attitudes. Among the themes receiving special attention are: the nature of property, competition and planning, the status of work, corporate rights and responsibilities, profits and social needs, and distributive justice.

Day division, Second term: Lectures and discussion three hours a week.

B. Wand

Philosophy 32.110

Consciousness and Reality

An examination of problems drawn from historical and contemporary sources concerning the relation of consciousness and reality. The questions to be discussed include: Are we conscious of a world existing independently of us? Does our consciousness extend only to objects in the world or to realities beyond this realm? Is consciousness reducible to a physical process? Can consciousness exist independently of the body? Is there a consciousness of self and what is the relation between self and the body of which we are conscious? Is there consciousness of value existing objectively in the universe? Not offered 1980-81.

Philosophy 32.120

Reason and Argument

An examination of the nature of controversy and of procedures for help in resolving it by rational means. The course includes an introduction to formal logic. A variety of extended arguments are considered. Some of these arguments (about half) are philosophical; others are arguments in support of controversial theses in such fields as morals, politics, education and theology.

Day division: Lectures and discussion three hours a week.

S. Talmage

Philosophy 32.150

Contemporary Moral, Social, and Religious Issues

A critical examination of some of the philosophical problems associated with such topical issues as women's liberation (e.g. marriage, the family, abortion, and sexual ethics); Marxism, atheism vs. theism; the meaning of life (e.g. existentialism); moral relativism vs. moral objectivism; egoistic vs. non-egoistic ethics (e.g. Ayn Rand and utilitarianism); legal paternalism (e.g. "hard" and "soft" drugs, suicide, medicare); free will; civil disobedience and the right of nations to self-determination.

Day and Evening divisions: Lectures and discussion three hours a week.

J. Wolfe

Philosophy 32.200

Science and Man

Topics include the scientific view of the world, scientific revolutions and the growth of knowledge and objectivity. Specific attention is paid to fundamental concepts such as observation, explanation, causation and induction. The course concludes with an examination of the biological and social sciences. Not offered 1980-81.

Philosophy 32.201*

Logic

An introduction to the techniques and philosophical implications of formal logic with emphasis on the following issues: translation of expressions into symbolic form, formulation and application of the rules of valid inference, the relation between logic and language, and the nature of logical necessity. Not offered 1980-81.

Philosophy 32.202

Ideas of Man and Society in Canada

An examination of Canadian ideas of man, culture and society in the context of their philosophical traditions. Emphasis is placed on the themes of nationalism; man's interaction with his natural and technical environment; the individual's relation to his past, his society and his culture; and the ideological aspects of traditionalism, social reform and revolution. The following representatives of Canadian thinking, among others, are discussed: G. Grant, C.B. McPherson, F. Dumont.

Day division: Lectures and discussion three hours a week.

B.I. Egyed

Philosophy 32.205

Greek Philosophy

An examination of early speculation in Greece, the roles of the Sophists and of Socrates, together with a study of selected topics in the works of Plato and Aristotle. (Also listed as Classical Civilization 13.240.)

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division: Lectures and discussion three hours a week.

D.E. Dubrule, A. Jeffrey

Philosophy 32.211*

History of Ethics

An examination of historical discussions of the principal questions in moral philosophy: Hobbes on egoism and obligation, Butler on conscience, Kant on moral principles, J.S. Mill on utilitarianism.

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J.C.S. Wernham

Philosophy 32.212*

Ethics

An examination of contemporary discussions of the principal questions in moral philosophy: Whether moral beliefs can be rationally justified and, if so, how; whether people are morally responsible for their actions and, if so, when; and a selection of moral issues such as the following: punishment, suicide, the morality of war and the rights of disadvantaged groups. Prerequisite: Philosophy 32.211*.

Day division, Second term: Lectures and discussion three hours a week.

S.G. Clarke

Philosophy 32.215

Modern Philosophy: 1600-1800

An examination of the major philosophical writers of the seventeenth and eighteenth centuries. Selections are studied from the works of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume.

Prerequisite: An introductory course in Philosophy.

Day division: Lectures and discussion three hours a week.

J.C.S. Wernham

Philosophy 32.225

Reason and Revelation

A study of the evolution of western philosophy up to the end of the Renaissance. Theories of man, knowledge and reality are traced from the early rationalism of the Greeks through the syntheses of reason with Christianity in the Middle Ages to the humanist rationality of the Renaissance. In-depth studies are made of six important thinkers: Plotinus, Augustine, Thomas Aquinas, William of Ockham, Montaigne and Francis Bacon.

Day division: Lectures and discussion three hours a week.

D.E. Dubrule

Philosophy 32.240

Aesthetics

Analysis of problems in the description, interpretation and evaluation of works of art, including music, literature and the visual arts, together with the study of types of aesthetic theory.

Not offered 1980-81.

Philosophy 32.241*

Aesthetics

The first half of Philosophy 32.240, Aesthetics. (For Architecture students only.)

Not offered 1980-81.

Philosophy 32.242*

Aesthetics

The second half of Philosophy 32.240, Aesthetics. (For Architecture students only.)

Not offered 1980-81.

Philosophy 32.245*

Philosophy of the Paranormal

A philosophical examination of claims, concepts, theories and methods in parapsychology as well as astrology and other occult studies. Consideration is given to the question of their scientific character and the relation of paranormal and occult phenomena to philosophical issues such as survival of death, the immortality of the soul and the nature of man, time, space, causality and perception. Specific topics dealt with vary from year to year, but the following are likely to be included: telepathy, clairvoyance, precognition, retrocognition, psychokinesis, out-of-body experiences, mental mediumship, demonic possession, apparitions and time travel.

Prerequisite: An introductory course or Second-year standing.

Day division, First term: Lectures and discussion three hours a week.

D.E. Dubrule

Philosophy 32.246*

Death

A study of some major issues in philosophical anthropology. Problems considered include philosophical concepts of death, medical and legal definitions of death and the meaning and implications of some ways of dying: suicide, euthanasia, infanticide, abortion, murder and capital punishment. (Students are reminded of complementary courses: Philosophy 32.245* and 32.251* and Religion 34.238*.)

Not offered 1980-81.

Philosophy 32.251*

Personal Identity and the Self

What is it to have a sense of one's own identity? What do we know of the self? What is personal identity and how is it related to responsibility, love, etc? What is the relation of 'mind' to body?

Prerequisite: An introductory course in Philosophy.

Day division, First term: Discussion and lectures three hours a week.

J.A. Brook

Philosophy 32.252*

Philosophy of Mind

Topics are selected according to students' interests, and often include: free will; pleasure and pain; mental illness; desire and action; can we will our beliefs; and how to treat persons as persons, not things.

Prerequisite: Philosophy 32.251*.

Day division, Second term: Discussion and lectures three hours a week.

J.A. Brook

Philosophy 32.260

Philosophy of Religion

A philosophical examination of some characteristic concepts of religion, such as faith, hope, worship, revelation, miracle, God. (Also listed as Religion 34.260.)

Not offered 1980-81.

Philosophy 32.265

Philosophy of Education

A philosophical study of what are and what should be the goals of education. Roughly equal time is spent discussing problems related to pre-university and university education. The conservative, liberal, anarchist and Marxist concepts of education are outlined and evaluated. The views of Marx, Russell, Dewey, Piaget, Neill, Kohlberg, Peters, Wolff, and Illich, among others, are considered in relation to such problems as freedom and authority in education, education and ideology, deschooling society, grading, moral education and moral indoctrination, "I.Q." testing, the nature of the curriculum, racism and the university, and the "ivory tower" conception of the university. Some time is devoted to a comparison of educational philosophies in North America and socialist countries.

Not offered 1980-81.

Philosophy 32.266*

Personal Ideals and Lifestyles

Problems of describing, analysing and evaluating personal ideals and lifestyles are investigated. Emphasis will be given to the works of Iris Murdoch and Albert Camus.

Day division, First term: Lectures and discussion three hours a week.

S.G. Clarke

Philosophy 32.270

Existentialism and Phenomenology

A study of recent and contemporary philosophical movements in continental Europe. An account is given of the historical origins of these movements in the thought of Kierkegaard and Husserl. Special attention is paid to the philosophy of Sartre. The views of Nietzsche, Heidegger, Camus and Merleau-Ponty, together with those of some of their commentators, will also be discussed.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

R.R.A. Marlin

Philosophy 32.280

Language and Communication

The nature of language as a system of human communication, theories of meaning and meaningfulness, the relation of language to reality and thought.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Evening division: Lectures and discussion three hours a week.

S. Talmage

Philosophy 32.284*

Society, Value and Technology

An examination of some ethical problems raised by actual and conceivable advances in technology. In the light of the present and future supply of resources, the modern urban environment and communication systems, what sort of society should we strive for? Specific issues dealt with include genetic engineering, obligations to future generations, triage and fair distribution of the world's vital resources, privacy and social control and the ideas of progress and growth.

Prerequisite: A full introductory credit in Philosophy or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J.T. O'Manique

Philosophy 32.290

Truth and Propaganda

A study of techniques, ancient as well as modern, for influencing public opinion. The ethics of various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda", "manipulation", and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open society, as against those promoted by closed societies, also receive attention, account being taken of subtler as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Mass Communication 27.290.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division: Lectures and discussion three hours a week.

R.R.A. Marlin

Philosophy 32.305

Modern Philosophy: 1800-

An examination of some major philosophical writers of the nineteenth and twentieth centuries: German idealism from Kant to Hegel; the anti-Hegelian philosophies of Marx, Kierkegaard, Schopenhauer and Nietzsche; American Pragmatism (James, Peirce and Dewey).

Prerequisite: An introductory course in Philosophy or permission of the Department.

Not offered 1980-81.

Philosophy 32.306*

Kant to Hegel

The first half of Philosophy 32.305: The development of German idealism from Kant to Hegel.

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J.A. Brook

Philosophy 32.311*

Philosophy of Law: The Nature of Law

This course involves a consideration of the concept of law, and of those concepts which are commonly associated with it, viz. rules, obligations, authority, coercion, and force. (Also listed as Law 51.311*.)

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, First term: Lectures and discussion three hours a week.

P.J. Fitzgerald (Law)

Philosophy 32.312*

Philosophy of Law: The Logic of Law

This course examines legal reasoning and analyses concepts of particular significance to the law. These include justice, rights and duties, liability, punishment, ownership and possession.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Day division, Second term: Lectures and discussion three hours a week.

R.R.A. Marlin

Philosophy 32.320

Marxism

The aim of this course is to show how Marxism is both a continuation and a radical critique of the Western philosophical tradition. After a detailed examination of the nature of dialectical materialism, some traditional philosophical problems are discussed from a Marxist point of view. Such issues as the nature of man, the way he creates his environment, the historical forces which condition him, and the nature of alienation are viewed through the writings of nineteenth century and contemporary Marxists.

Not offered 1980-81.

Philosophy 32.330

Social and Political Philosophy

An analysis of the concepts used to explain and justify social and political thinking or action: state, society, the common good, justice, rights and obligations, punishment and liberty, and a consideration of the moral basis of political obligation.

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division: Lectures and discussion three hours a week.

B. Wand

Philosophy 32.332*

Issues in the Philosophy of Science

An introduction to the main currents of post-positivist philosophy of science. The main concepts discussed in the course include: truth, meaning, testability, theory ladenness, progress, induction, objectivity, rationality, explanation, and paradigms. An attempt is made to trace the use of these concepts and the various philosophical problems to which they give rise from early twentieth century positivism, through the writings of Karl Popper and Thomas Kuhn to the writings of Paul Feyerabend, Imre Lakatos and Mary Hesse.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Students will not receive credit for both Philosophy 32.232* and Philosophy 32.332*.

Day division, First term: Lectures and discussion three hours a week.

B.E. Egyed

Philosophy 32.333*

Science and the Structure of Society

An introduction to the ideas of the Frankfurt School, of Hermeneutics, and of Structuralism. The views of Horkheimer, Habermas, Ricoeur, Althusser and Foucault on the value of scientific discourse and the nature of the critical study of society are examined in some detail.

Prerequisite: An introductory course in Philosophy or Second-year standing.

Students will not receive credit for both Philosophy 32.233* and Philosophy 32.333*.

Day division, Second term: Lectures and discussion three hours a week.

B.E. Egyed

Philosophy 32.335

Logic

An introduction to symbolic logic together with a discussion of some problems in the philosophy of logic.

Prerequisite: An introductory course in Philosophy or permission of the Department.

Day division: Lectures and discussion three hours a week.

J.W. Leyden

Philosophy 32.366*

Philosophies of Love

Philosophical theories of love are studied with emphasis on their implications for understanding human nature and developing moral ideals.

Recommended background: Philosophy 32.266.

Day division, Second term: Lectures and discussion three hours a week.

S.G. Clarke

Philosophy 32.380

Moore, Russell, Wittgenstein

A brief account of the Idealism of Bradley sets the context for a study of the reactions of Moore and Russell. Their contributions to metaphysics, theory of knowledge and linguistic analysis are examined and compared with the early views of Wittgenstein. In the Second term there is a concentrated study of the later work of Wittgenstein. The approach is both interpretive and problem-oriented.

Prerequisites: Two courses in Philosophy.

Day division: Lectures and discussion three hours a week.

J.A. Brook, J.W. Leyden

Philosophy 32.391*

Philosophical Problems

Topic to be chosen annually from the following: metaphysics-epistemology, metaphilosophy. This course is primarily intended for Major or Honours students in their Third year.

Not offered 1980-81.

Philosophy 32.399

Independent Study

Normally restricted to students with at least three courses in Philosophy and with high standing in Philosophy courses. The students submit topics for approval and present papers for grading.

■ **Fourth-Year Courses**

Philosophy 32.404*

Greek Philosophy

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

First term: Seminar two hours a week.

A. Jeffrey

Philosophy 32.406*

Descartes

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1980-81.

Philosophy 32.407*

Hume

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1980-81.

Philosophy 32.408*

Kant

An intensive study of selected texts.

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.

Not offered 1980-81.

Philosophy 32.409*

Marx

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Not offered 1980-81.

Philosophy 32.411*

Action, Intention and Responsibility

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Not offered 1980-81.

Philosophy 32.416*

Medieval Philosophy

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Not offered 1980-81.

Philosophy 32.421*

Epistemology

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
First term: Seminar two hours a week.
J.C.S. Wernham

Philosophy 32.431*

Philosophy of Logic

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
First term: Seminar two hours a week.
S. Talmage

Philosophy 32.441*

Contemporary Moral or Political Philosophy

An intensive study of recent works in one or both of these areas.
Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Not offered 1980-81.

Philosophy 32.461*

Philosophy of Religion

Topic for 1980-81: The Concept of Symbol. Problems in the interpretation of religious language and in the justification of religious claims.
Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Second term: Seminar two hours a week.
J.C.S. Wernham

Philosophy 32.481*

Philosophy of Language

Prerequisite: Final-year Honours standing in a Philosophy program or permission of the Department.
Second term: Seminar two hours a week.
S.G. Clarke

Philosophy 32.490

Tutorial

Philosophy 32.491*

Tutorial

Graduate Courses Open to Undergraduate Students

The following graduate course may with permission be taken by Honours and Combined Honours students in their final year.

Philosophy

32.545 Departmental Seminar

Officers of Instruction

Chairman

Robert J. Jackson

Assistant Chairman

G. Roseme

Supervisors of Graduate Studies

M.S. Whittington, B.W. Tomlin

Supervisor of Honours

J.H. Pammett

Supervisor of Majors

M.B. Dolan

Professor Emeritus

Henry B. Mayo

Professors

Douglas G. Anglin

Bohdan R. Bociurkiw

Robert J. Jackson

Peyton V. Lyon

Kenneth D. McRae

Khayyam Z. Paltiel

T. Rakowska-Harmstone

Donald C. Rowat

Radoslav Selucky

V. Subramaniam

Harald von Riekhoff

Associate Professors

Robert E. Bedeski

Nguyen H. Chi

Jane Jenson

Frederic Kirk

David Kwavnick

Maureen A. Molot

Willard A. Mullins

Lynn K. Mytelka

John R. Nellis

Jon H. Pammett

Leo V. Panitch

George Roseme

Paul L. Rosen

Elliot L. Tepper

Brian W. Tomlin

Jill McCalla Vickers

Reginald A. Whitaker

Michael S. Whittington

Conrad J. Winn

Assistant Professors

Jon Alexander

David Bellamy

W. Thomas Darby

Michael B. Dolan

Charles Schuetz

Glen S. Williams

Lecturer

Kenneth D. Hart

General Information

Ottawa provides a wealth of resources, both in personnel and in research materials, for the student of government, politics, public administration and international relations. Undergraduates will be assisted in making the fullest use of these unique advantages of the national capital. The Political Science Department offers courses in the following fields of study: Canadian government and politics, comparative institutions and politics, public administration and public policy, international relations, political theory and methodology.

Students should note that it is possible to combine a Major or Honours in Political Science with a pattern of studies, such as urban studies, studies in developing areas, etc. Those wishing to do so should consult the Department for a suggested outline of courses.

Major Programs

A Major in Political Science requires Political Science 47.100; one of 47.230, 47.231, or 47.270; and four or more additional courses in the Department.

First-year students intending to enter a Major (or Honours) program in Political Science should note that they may take a 200-level course concurrently with Political Science 47.100.

A Combined Major, including Political Science, requires Political Science 47.100 and three or more additional courses.

Majors should take a number of courses in related Social Sciences. Final-year Majors with the required standing, may, with permission, be admitted to Fourth-year Honours courses. The entire program must be approved by the Department.

Majors must obtain at least C- in Political Science 47.100 to enter Second year and must maintain an overall average of at least C- in their Political Science courses to continue into Third year. For examinations to raise grades, see p. 44.

Honours Programs

The Honours programs may be entered in the First year, or by transfer from Major programs, if sufficient standing has been obtained. Only students whose past

record indicates the ability to meet the Department's language requirement, and to obtain at least a B- in the Honours essay will be recommended for Fourth-year Honours. An Honours student may be approved for a Major degree at the end of the Third year if the requirements under the Major program have been completed. The following programs are available.

Honours in Political Science

For full Honours, twenty courses will be required, including at least nine courses in Political Science. The Political Science courses must comprise:

1. Political Science 47.100, 47.231, 47.270, and 47.498;
2. One full credit (or two half credits), chosen from: 47.200, 47.300*, 47.301*, 47.302*, 47.303*, 47.304*, 47.335*, 47.336*, 47.340, 47.366*, 47.400, 47.401, 47.402*, 47.404*, 47.406*, 47.409*;
3. One full credit (or two half credits) chosen from: 47.215, 47.260, 47.310, 47.312, 47.314*, 47.315, 47.316*, 47.317*, 47.320, 47.321, 47.322, 47.342*, 47.360*, 47.361*, 47.365*, 47.366*, 47.405, 47.410, 47.411, 47.420*, 47.421*, 47.422*, 47.460, 47.461*, 47.462*, 47.466*, 47.482*, 47.483*;
4. Three additional credits in Political Science of which the equivalent of one full credit must be a Fourth-year seminar.
5. *Language requirement:* The Department requires Honours students to have a knowledge of French. This requirement may be satisfied in one of two ways: (a) Successful completion of French 20.106*, 20.107, 20.108, or 20.109, or an equivalent course approved by the Department. Students with a limited background in French should note that it may be necessary for them to take French 20.100 or 20.102 in order to be admitted to the above-listed courses. (b) The Department conducts language examinations twice each year (November and March). Successful completion of this examination at any time prior to Fourth year will satisfy the language requirement. *Fourth year students are not eligible to take these examinations.* If the examination is attempted and failed, the student must then satisfy the language requirement by completing option (a) above.

Students from abroad, whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Honours to substitute this language for French.

Candidates present a graduation essay on some topic involving independent investigation (Political Science 47.498); they may be examined orally on this essay and must receive at least B- in this course. They must select a minor field or fields, preferably in Economics, History, Law, Philosophy, Sociology or Psychology.

Combined Honours

Students intending to enter a program combining Political Science with another discipline should, in their First year, take Political Science 47.100 and the introductory course in the other discipline. For Combined Honours at least six credits in Political Science will be required, including:

1. Political Science 47.100, 47.231, 47.270 or its equivalent; a Fourth-year seminar; 47.498 unless the Honours essay is written in the other discipline of the Combined program;
2. The equivalent of two credits, chosen from requirements 2 and/or 3 listed for the full Honours program. The two credits may be chosen from one list; one of the two credits may be the Fourth-year seminar;
3. The language requirement as stated for Honours in Political Science must be completed.
4. The requirements as stated for Combined Honours in the other discipline of the Combined program must be met.

Combined Honours, Journalism and Political Science

Students may select a course pattern that will lead either to the degree of B.A. with Combined Honours in Journalism and Political Science, in which case the Honours essay will be written for the Department of Political Science, or to the degree of B.J. with Combined Honours in Political Science, in which case the Honours essay will be written for the School of Journalism. Students in either program must complete twenty-one credits, and they must maintain a standing sufficiently high at all times to satisfy the standards of both the School of Journalism and the Department of Political Science. Please refer to the statements of standing on p. 102 (Journalism) and p. 91 (Arts and Social Sciences).

Course requirements are:

1. A minimum of six credits in Political Science including: 47.100, 47.231, 47.270 or its equivalent, 47.498 if the student is in the B.A. program, the equivalent of two credits chosen from requirements 2 and/or 3 listed for Honours in Political Science, the equivalent of one credit from the Fourth-year seminars offered.
2. A minimum of six and one-half credits in Journalism including: 28.100, 28.101*, 28.200, 28.220, 28.320, 28.321*, 28.351*, 28.421, and 28.498 if the student is in the B.J. program.
3. The language requirement as stated for Honours in Political Science must be completed.
4. An approved course in Canadian History. (Students who wish to practice Journalism in another country may be advised to choose a different History course.)

Combined Honours in Political Science and Sociology

Students in this program are required to complete six credits in Political Science including Political Science 47.100, 47.231, a Fourth-year seminar, and 47.498 (if the Honours Essay is written in Political Science). In addition, the student must complete one of the following methodology sequences: **(a)** in the Second year, Political Science 47.270; in the Third year, Sociology, 53.370; or **(b)** in the Second year, Sociology-Anthropology 56.200*, in the Third year, Political Science 47.470. Political Science 47.470 may not be counted as the required Fourth-year seminar course in Political Science.

Students must also meet requirements **2, 3, and 4** as stated for Combined Honours in Political Science.

Honours and Combined Honours Standing

Students must maintain a standing sufficiently high at all times to satisfy the requirements of the Faculty of Arts and Social Sciences as stated on p. 91.

Graduate Program

The Department of Political Science offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

■ First Year

Political Science 47.100

Introduction to Political Science

An introduction to four areas of concern in the study of contemporary political issues and problems: political thought, focusing upon the clash of modern ideologies such as fascism, socialism, liberalism, communism and nationalism; comparative government, starting from the Canadian system, and including one other western democracy, a communist system, and a developing country; international politics; and methods of enquiry.

Day and Evening divisions: Lectures and discussion three hours a week.

B. Ben-Dor, B.R. Bociurkiw, W.T. Darby, L.K. Mytelka, T. Rakowska-Harmstone, G. Roseme, C.F. Schuetz, E.L. Tepper, C.J. Winn

■ Second Year: Majors and Honours

Political Science 47.200

Canadian Government and Politics

A survey of the political process and political institutions in Canada.

Prerequisite: Political Science 47.100, or permission of the Department. Third-year students in another discipline will normally be permitted to take this course without having taken Political Science 47.100.

Day and Evening divisions: Lectures and discussion three hours a week.

D.J. Bellamy, K.Z. Paltiel, L.V. Panitch, M.S. Whittington, G.S. Williams, C.J. Winn

Political Science 47.215

Comparative Politics

An examination of concepts, theories and methods employed in the study of comparative politics, with particular emphasis on cross-national comparison of regimes and some of the major issues in the field.

Prerequisite: Political Science 47.100.

Day division: Lectures and discussion three hours a week.

R.J. Jackson

Political Science 47.230

History of Political Thought

A survey of some of the leading ideas about politics and society developed in the Western world. Evolving concepts of liberty, equality, justice, power, authority and sovereignty are considered in their historical context, from the ancient world to the nineteenth century. Among the political philosophers considered are Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau and Marx. (Only one of Political Science 47.230 or 47.231 may be taken for credit.)

Prerequisites: Political Science 47.100 or permission of the Department. Third-year students in another discipline may normally take this course without having taken Political Science 47.100.

Day and Evening divisions: Lectures and discussion three hours a week.

K.D. McRae, P.L. Rosen

Political Science 47.231

History of Political Thought

An intensive study of the development of Western political philosophy and related aspects of intellectual history from classical times to the end of the eighteenth century. Among the political philosophers considered are Plato, Aristotle, Machiavelli, Hobbes, Locke and Rousseau. (For Honours and graduate students in any discipline. Only one of Political Science 47.230 or 47.231 may be taken for credit.)

Prerequisite: Political Science 47.100 or permission of the Department.

Day and Evening divisions: Lectures and discussion three hours a week.

W.A. Mullins, R. Selucky, R.A. Whitaker

Political Science 47.260

International Politics

An analysis of the structure and processes of the international system; the interactions of both state and non-state actors (such as multinational enterprises). Contemporary approaches (for example, simulations)

to the systematic study of international phenomena are illustrated by reference to current developments such as nuclear proliferation and the tensions between rich and poor nations.

Prerequisite: Political Science 47.100 or permission of the Department.

Day and Evening divisions: Lectures and discussion three hours a week.

D.G. Anglin, M.B. Dolan, P.V. Lyon, C. Schuetz

Political Science 47.270

Political Enquiry

An introduction to the elements of systematic political analysis. The goals of the course are to enable students to understand and to take part in empirical research. In addition, students have an opportunity to become proficient in computer analysis of social science data. The course covers modes of enquiry in the discipline, including survey research methods and their statistical background. The instructors assume that students will have done no previous work in mathematics, statistics or computer science.

Prerequisite: Political Science 47.100.

Day and Evening divisions: Lectures two hours a week, laboratory or discussion one hour a week.

N.H. Chi

■ **Third Year: Majors and Honours**

Political Science 47.300*

Canadian Provincial Politics

A comparative examination of the nature of Canadian provincial politics. Topics include: political culture, history, party systems, electoral systems, and voting behaviour.

Prerequisite: Political Science 47.200 or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J.H. Pammett

Political Science 47.301*

Canadian Provincial Government and Intergovernmental Relations

A comparative examination of the institutions of provincial governments, with concentration on the executive and legislature. In addition, attention is focused on the structures and processes of intergovernmental relations, including federal-provincial conferences, selected issues, and provincial-municipal relations.

Prerequisite: Political Science 47.200 or permission of the Department.

Political Science 47.300* is recommended.

Day division, Second term: Lectures and discussion three hours a week.

Political Science 47.302*

Canadian Municipal Government

An examination of the nature and problems of Canadian municipal government, including metropolitan

and regional government and provincial-municipal relations.

Prerequisites: Political Science 47.100 and preferably also 47.200, or completion of Second year in another discipline.

Day division, First term: Lectures and discussion three hours a week.

Henry B. Mayo

Political Science 47.303*

Canadian Urban Politics

An examination of the nature and problems of Canadian urban politics.

Prerequisite: Political Science 47.302* or permission of the Department.

Not offered 1980-81.

Political Science 47.304*

Political Parties and Elections in Canada

An examination of the evolution of the party system, the growth of major and minor party movements and the electoral process in Canada.

Prerequisite: Political Science 47.200 or a previous course in the political process.

Evening division, First term: Lectures and discussion three hours a week.

J. Jenson

Political Science 47.310

Government and Politics in Africa

The evolution and functioning of African political systems, with emphasis on recent developments in West Central and East Africa.

Prerequisite: Political Science 47.100.

Evening division: Lectures and discussion three hours a week.

D.G. Anglin

Political Science 47.312

Government and Politics of East Asia

The evolution and functioning of the political systems of China, Japan, and Korea.

Prerequisite: Political Science 47.100 and preferably 47.215.

Not offered 1980-81.

Political Science 47.313*

Women in Politics: A Comparative Perspective

An examination of the participation of women in politics, especially in developed democracies. Special emphasis is placed on the structural and cultural impediments to full participation in the Canadian context, using primary data.

Prerequisites: Political Science 47.100 and one of 47.200, 47.215 or 47.270.

Day division, Second term: Lectures and discussion three hours a week.

J.M. Vickers

Political Science 47.314★

Eastern European Politics

A comparative examination of political institutions and processes in the Communist states of Eastern Europe. Prerequisite: Political Science 47.100 and preferably 47.215.

Day division, First term: Lectures and discussion three hours a week.

R. Selucky

Political Science 47.315

Government and Politics of South and South East Asia

This course on developing areas acquaints the student with the patterns of colonial history, emergent political regimes and problems of development and foreign policy in the countries from Pakistan through the Philippine Islands, with special emphasis on problems of political change.

Prerequisite: Political Science 47.100 and preferably 47.215.

Not offered 1980-81.

Political Science 47.316★

Revolution

An examination of theories of revolution from Aristotle through the present era. Students are encouraged to examine revolution as a concept, and as an empirical fact of central importance to our age.

Prerequisite: Political Science 47.215 or permission of the Department.

Not offered 1980-81.

Political Science 47.317★

The Causes of War

A detailed examination of alternate theories of the causes of war. The course examines such alternate perspectives as biological, social and comparative historical approaches, and includes the results of peace research activities of the past two decades.

Prerequisite: Political Science 47.215 or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

H. von Riekhoff

Political Science 47.318★

Women in Developing Politics: A Comparative Assessment

This course examines the status and role of women in developing countries and in socialist countries mobilized for social change, including case studies drawn from Africa, Asia, and Latin America. It includes an examination of aspects of development theories from a feminist perspective.

Prerequisite: Political Science 47.215 or permission of the Department.

Not offered 1980-81.

Political Science 47.320

Soviet Government and Politics

A study of the environment and political culture of the Soviet political system; political socialization, communication, and elite recruitment; the structure and functioning of the Communist Party and governmental institutions; policy making and implementation, capabilities of the Soviet political system.

Prerequisites: Political Science 47.100 and preferably 47.215, or History 24.260.

Day division: Lectures and discussion three hours a week.

B.R. Bociurkiw

Political Science 47.321

Government and Politics of Western Europe

A survey of the political processes and institutions in the democracies of Western Europe, with emphasis on Britain, France, Italy and the German Federal Republic. Prerequisite: Political Science 47.100 and preferably 47.215.

Day division: Lectures and discussion three hours a week.

Political Science 47.322

Government and Politics of the United States

American political thought, constitutional development, and the governmental process.

Prerequisite: Political Science 47.100 and preferably 47.215.

Day division: Lectures and discussion three hours a week.

P.L. Rosen

Political Science 47.330★

Politics and Literature

A study of imaginative prose in which political ideas and/or political settings dominate. Literature as political communication, the impact of literature upon politics, the peculiar value of literature in the study of politics, its shortcomings.

Prerequisites: Political Science 47.100 and permission of the Department.

Evening division, First term: Lectures and discussion three hours a week.

G. Roseme

Political Science 47.331★

Politics and Psychoanalytic Thought

An investigation and critique of the contribution of psychoanalytic thought to political and social theory. Emphasis is placed on the origin and function of culture, instinct modification, perversion, character and political order; the psychoanalytic ethic and the therapeutic state; the Freudian-Marxist dialectic and the critique of society.

Prerequisite: Political Science 47.230 or Psychology 49.261 or permission of the Department.

Evening division, Second term: Lectures and discussion three hours a week.

P.L. Rosen

Political Science 47.332*

East Asian Political Thought — China, Japan, and Korea

A seminar on Chinese political philosophy with special reference to historical and modern thought on the State. Japanese and Korean variants of the Chinese state are also discussed.

Prerequisite: Political Science 47.100 or permission of the Department.

Not offered 1980-81.

Political Science 47.333

Modern Political Thought and Ideology

An analysis of leading political concepts and ideologies since 1800, including utilitarianism, liberalism, conservatism, socialism and fascism.

Day division: Lectures and discussion three hours a week.

W.A. Mullins

Political Science 47.335*

Canadian Political Ideas

An examination of the sources and development of Canadian political ideas. Conservatism, liberalism, socialism, radical and protest politics, nationalism and concepts of federalism are considered in their historical context, with major emphasis on the twentieth century and the contemporary conflict of political ideas. The relationship between ideas and political institutions and policies is a central focus of the course.

Prerequisite: Political Science 47.200 or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

R.A. Whitaker

Political Science 47.336*

Canadian Political Culture and Ideologies

An analysis of the elements of contemporary Canadian political culture, with special reference to the social bases of ideologies and to regional differences within Canada.

Prerequisite: Political Science 47.200.

Day division, Second term: Lectures and discussion three hours a week.

J.H. Pammett

Political Science 47.340

Canadian Public Administration

A survey of the political and social impact of the federal public service in Canada, including the nature of bureaucracy, its role in policy making, and social and political control of the public service in Canada.

Prerequisite: Political Science 47.200 or permission of the Department.

Day and Evening divisions: Lectures and discussion three hours a week.

D. Bellamy, D.C. Rowat

Political Science 47.342*

Comparative Public Bureaucracy

A comparative study of the historical evolution of bureaucracy in Western Europe under absolute monarchy; the interaction of democracy and bureaucracy in Europe and North America; the transplanting of British and French bureaucratic institutions; and the significance of bureaucracy in developed and developing societies.

Prerequisite: Political Science 47.100.

Not offered 1980-81.

Political Science 47.345*

Contemporary Public Policy Analysis

An examination of the factors which have led to the expansion of state activities in Canada and other liberal democracies, and a survey of the context and process of policy formation in such fields as social welfare; regional integration, foreign investment and trade, and the regulation of labour and capital.

Prerequisite: Political Science 47.100 or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

G.S. Williams

Political Science 47.360*

International Institutions

Origins, structure and functioning of international institutions with emphasis on the United Nations as well as regional organizations. Topics include peace and security, international aid and development, human rights and the control of global resources.

Prerequisite: Political Science 47.260 or permission of the Department.

Evening division, Second term: Lectures and discussion three hours a week.

P.V. Lyon

Political Science 47.361*

Theories of International Politics

A survey of theoretical approaches to the study of international politics including an examination of the major concepts used for analysis and explanation in the field.

Prerequisite: Political Science 47.260 or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

H. von Riekhoff

Political Science 47.365*

Comparative Study of Foreign Policy

An examination of the utility of comparative analysis in the study of the objectives; strategies; and decision-making processes involved in the foreign policies of states.

Prerequisite: Political Science 47.260 or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

Political Science 47.366*

Canadian Foreign Policy

An examination of the traditions, domestic influences, objectives, capabilities, and decision-making processes, and analysis of selected contemporary issues. Prerequisite: Political Science 47.260 or permission of the Department.

Evening division, First term: Lectures and discussion three hours a week.

P.V. Lyon

■ **Fourth Year: Honours and Graduate**

Third-year Honours students, and Majors with equivalent standing may, with permission of the Department, be admitted to these seminars.

Political Science 47.400

Topics in Canadian Government and Politics

In 1980-81 three separate seminars are offered.

Section A: Political Economy of Canada. An examination of selected issues in Canadian political economy including the role of the state in the Canadian economy, the political aspects of foreign ownership, and economic structure and political change.

J. Jenson, L.V. Panitch

Section B: Canadian Political Institutions. A seminar on selected topics on institutions of Canadian Government at the federal level.

C.J. Winn

Section C: Canadian Political Behaviour. A seminar on voting, public opinion, political violence, socialization and other aspects of political behaviour in Canada. The course also examines religion, class, and region as determinants of political cleavage.

J.H. Pammett

Prerequisite: Political Science 47.200.

Day and Evening divisions: Seminar three hours a week.

Political Science 47.401

Policy Making in Canada

A seminar which critically examines relevant policy patterns, structures and processes from a number of theoretical perspectives, in relation to the Canadian political economy and to selected areas of contemporary Canadian public policy (such as energy, social welfare, foreign investment, public expenditure and regulation).

Prerequisites: Political Science 47.200 and 47.340 or permission of the Department.

Day and Evening divisions: Seminar three hours a week.

F. Kirk, G.S. Williams

Political Science 47.402*

Policy Seminar: Problems of Northern Development

A research seminar that examines the issues, the policy processes and the problems of policy implementation in the political and economic development of Canada's northern territories.

Prerequisites: Political Science 47.200 and 47.340 or permission of the Department.

Evening division, Second term: Seminar three hours a week.

M.S. Whittington

Political Science 47.403*

Politics and the Media

A seminar on the role of the mass media in the Canadian political system.

Prerequisite: Political Science 47.200 or permission of the Department.

Not offered 1980-81.

Political Science 47.404*

Interest Groups in Canadian Politics

A seminar on the role of organized groups in the political process with special reference to Canada.

Prerequisite: Political Science 47.200 or permission of the Department.

Day division, First term: Seminar three hours a week.

K.Z. Paltiel

Political Science 47.405

Federalism

A seminar on the theory and practice of federalism, emphasizing the ways in which federal institutions both influence and are influenced by the distribution of political and economic power in a society. Emphasis will be given to Canada, Australia, and the United States.

Prerequisite: Political Science 47.200 or permission of the Department.

Evening division: Seminar three hours a week.

C. Schuetz

Political Science 47.406*

Legislative Process in Canada

A seminar on the role of Parliament and of the individual M.P. in terms of policy making, representation and the passage of legislation.

Prerequisite: Political Science 47.200 or permission of the Department.

Not offered 1980-81.

Political Science 47.409*

French Canadian Politics

A seminar on the politics and institutions of French Canada including social and political philosophy and nationalism.

Prerequisites: Political Science 47.200 and a reading knowledge of French.

Day division, Second term: Seminar three hours a week.

Political Science 47.410

Politics of Developed Societies

A seminar on the relationship between state and society in developed nations. Particular emphasis is

given to the study of changes in social structure, their implications for consensus or conflict, the role of parties and interest groups, and public policy.

Prerequisite: A Third-year course in the politics of developed areas or permission of the Department.

Day division: Seminar three hours a week.

J. Jenson, L.V. Panitch

Political Science 47.411

Politics of Developing Societies

Examination of political change, violent and non-violent. Roles of parties, elites, the military and institutions in developing societies. Strategies and problems of development.

Prerequisite: A Third-year course in the politics of developing countries or permission of the Department.

Day division: Seminar three hours a week.

Political Science 47.420*

Policy Making in the United States

A seminar on conflict and cooperation in the United States legislative and executive/bureaucratic arenas; this course also treats overlapping struggles over policy initiative, innovation and planning. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Not offered 1980-81.

Political Science 47.421*

Politics of Influence in the United States

A seminar on parties, interest groups, coalitions, movement and other significant influences upon who gets what, when, how in the United States. Other topics include elections, democratic accountability and political uses of mass media. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Day division, First term: Seminar three hours a week.

F. Kirk

Political Science 47.422*

Constitutional Politics

A seminar on the political character of leading western constitutions, with special emphasis on judicial politics and judicial policy-making in the United States; consideration will also be given to developments in Canada, Britain and France.

Prerequisites: Political Science 47.100 and 47.322 or permission of the Department.

Not offered 1980-81.

Political Science 47.430*

Concepts of the State

A critical survey of concepts of the State from Hegel to the present with emphasis on the dichotomy between the political and civil society, as well as on an analysis of class nature and regulatory role of the State in modern societies.

Prerequisite: Political Science 47.230 or 47.333 or permission of the Department.

Not offered 1980-81.

Political Science 47.431*

Marxist Thought

An examination of Marxism with special emphasis on Marx and Engels, and including writings from all periods of their work.

Prerequisite: Political Science 47.230, 47.231 or 47.333 or permission of the Department.

Day division, First term: Seminar three hours a week.

R. Selucky

Political Science 47.432*

Contemporary Marxism

An examination of all relevant interpretations of Marx's theory including evolutionary socialism, Leninism, Trotskyism, Stalinism, Maoism and the main schools of contemporary revisionism.

Prerequisite: Political Science 47.431*.

Day division, Second term: Seminar three hours a week.

R. Selucky

Political Science 47.435

The Conflict of Ideas in Contemporary Society

A seminar on the currents of conflicting political thought in the present day. Special attention is given to the crises of authority and selected forms of contemporary radicalism and conservatism.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Political Science 47.446

Theories of Public Administration

A seminar on theories of bureaucracy, organization, and comparison, with topics in the second half chosen according to the interests of the students.

Prerequisite: Political Science 47.340.

Day division: Seminar three hours a week.

D.C. Rowat

Political Science 47.460

Analysis of International Politics

Some principal issues in international relations, theory building, evaluation of concepts, research design, philosophy of science criteria and policy relevance in ongoing research in international relations theory.

Prerequisite: Political Science 47.260 or permission of the Department.

Day division: Seminar three hours a week.

B.W. Tomlin

Political Science 47.461*

Soviet Foreign Policy

An examination of the foreign policy of the Soviet Union, with special emphasis on trends since World War II and on the period of détente.

Prerequisites: Political Science 47.260 and 47.320 or permission of the Department.

Day division, First term: Seminar three hours a week.

T. Rakowska-Harmstone

Political Science 47.462*

International Communist Movement

An examination of the international communist movement, with special emphasis on the growth of polycentrism, Eurocommunism and specific relationships with national liberation movements in the Third World.

Prerequisites: Political Science 47.260 and 47.320 or permission of the Department.

Not offered 1980-81.

Political Science 47.466*

American Foreign Policy

A seminar on sources, trends and conflicting interpretations of the international roles of the United States since World War II. Foreign policy machinery and processes are assessed in terms of the relative importance of perceptions, ideology, self-interest, and domestic and foreign pressures. Special emphases are determined by the needs and interests of students.

Prerequisite: Political Science 47.260.

Not offered 1980-81.

Political Science 47.470

Political Research Design and Data Analysis

The framing of quantitative research problems, including hypothesis formation and testing, application of models, sampling, scaling techniques, and computer and data processing techniques. Specific application will be made to such fields as voting, legislative, judicial and administrative behaviour.

Prerequisite: Permission of the Department.

Day division: Seminar three hours a week.

N.H. Chi

Political Science 47.482*

International Politics of Africa

The interactions of African states within the African subsystem and with other sectors in the international system. Each year the seminar will focus on a particular theme.

Prerequisite: Political Science 47.260 or 47.310 or permission of the Department.

Day division, Second term: Seminar three hours a week.

D.G. Anglin

Political Science 47.483*

Foreign Policies of Major East Asian Powers

The foreign policies of the East Asian powers, with special attention to China and Japan; an analysis of the domestic sources of policy, capabilities, interests, decision-making processes and foreign relations.

Prerequisite: Political Science 47.260 or 47.312 or permission of the Department.

Not offered 1980-81.

Political Science 47.490

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be

arranged with the permission of the Department and agreement of the instructor.

Day division: Tutorial hours arranged.

Political Science 47.491*

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Day division, First term: Tutorial hours arranged.

Political Science 47.492*

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Day division, Second term: Tutorial hours arranged.

Political Science 47.498

Honours Graduation Essay

Day division: Tutorial hours arranged.

■ **Graduate Courses**

Fourth-year Honours students may, with permission of the Department, be admitted to the following 500-level Political Science seminars, which are more fully described in the Graduate Studies and Research Calendar:

Political Science

- 47.500* Canadian Local Government and Politics
- 47.501* Canadian Provincial Government and Politics
- 47.502* Comparative Local Government
- 47.505 Comparative Government
- 47.506* Problems of Canadian Government I
- 47.507* Problems of Canadian Government II
- 47.508* The Politics of Energy and the Environment
- 47.510 The Political Process in Canada
- 47.514* Comparative Communist Politics, Theory and Practice
- 47.515* Comparative Communist Politics, Selected Aspects
- 47.516* Selected Problems in Soviet Politics
- 47.517* Selected Problems in African Politics
- 47.520* Nationalism
- 47.521* Politics in Rural Societies
- 47.525* Problems in American Government I
- 47.526* Problems in American Government II
- 47.530 Political Theory
- 47.531* Modern Political Culture and Ideology
- 47.532* Democratic Theories
- 47.533* Enquiries in Political Philosophy
- 47.534* Analytical Political Theory
- 47.535 The Canadian and American Political Traditions
- 47.540 Canadian Public Administration and Policy Analysis
- 47.544* Public Administration in Developed Western Countries
- 47.545* Public Administration in Developing Countries
- 47.547 Decision Theories and Policy Studies

- 47.550 Problems in Western European Politics
- 47.560 Theory and Research in International Politics
- 47.561* Canadian Foreign Policy
- 47.570 Advanced Research Methods
- 47.581* Foreign Policies of African States
- 47.585* Foreign Policy Analysis
- 47.586* Strategy
- 47.587* Analysis of International Organization
- 47.588* International Political Economy
- 47.589* Problems in International Politics

Related Courses

Subject to *prior* approval by the Department, a student in the Honours or Major program may use one course in a related discipline as a Political Science credit. This permission will be granted only if the content of the transfer course is very closely related to Political Science and if the Political Science Department does not itself offer a comparable course. Students in the Combined Major or Honours programs may not use related courses as Political Science credits.

Courses Planned for Summer School and Evening Division

The introductory course usually is offered in both Day and Evening sections in the Summer, as well as the regular academic year. In the Winter session Political Science 47.200, 47.230, 47.231, 47.260, 47.270 and 47.340, are offered in Day and Evening sections. It is expected that 300-level courses will be offered in the Evening at least once in a three-year period, and that five 400-level seminars will be offered in the Evening during the calendar year. Specific course offerings will depend on faculty availability and student interest and demand.

Officers of Instruction

Chairman

W.G. Webster

Chairman, Graduate Committee

B. Pappas

Chairman, Undergraduate Committee

W.E. Walther

Professors

P.A. Fried
R.M. Knights
A.B. Laver
M.E. Marshall
P.D. McCormack
T.J. Ryan
L.H. Strickland
T.N. Tombaugh
F.R. Wake
R.A. Wendt
D.W. Zimmerman

Associate Professors

D.A. Andrews
H. Anisman
J.C. Barefoot
D.K. Bernhardt
J.F. Campbell
W.L. Croll
R.F. Dillon
M.N. Donald
H.B. Ferguson
R.D. Hoge
W.D. Jones
J.B. Kelly
D.C. McIntyre
A. Moffitt
B. Pappas
J. Partington
W.M. Petrusic
N. Spanos
W. Thorngate
J. Tombaugh
W.E. Walther
W.G. Webster
R.B. Wells

Assistant Professors

E.J. Burwell
F. Cherry
R.F. Hoffmann
B. Little
D.C.S. Roberts
B.W. Tansley

Pre-School Director and Instructor

M. Barnett

Adjunct Professors

R. Corbin, *Bell Canada*
J. Goodman, *Children's Hospital of Eastern Ontario*
P. Firestone, *Children's Hospital of Eastern Ontario*
D. Peters, *University of Ottawa*
I. Rootman, *Department of National Health and Welfare*
H.M. Simpson, *Traffic Injury Research Foundation of Canada*
P.G. Swingle, *University of Ottawa*
R. Trites, *Royal Ottawa Hospital*

Research Associates

R.T. Pivik, *University of Ottawa*
E. Shershen, *Ottawa Board of Education*
A. Smith, *Children's Hospital of Eastern Ontario*

General Information

Programs Offered

The Department of Psychology offers three different undergraduate programs, two in the Faculty of Social Sciences and one in the Faculty of Science. The programs in the Faculty of Social Sciences are the Major B.A. program in Psychology (a minimum of fifteen full-course credits after Senior Matriculation) and the Honours B.A. program in Psychology (a minimum of twenty full-course credits after Senior Matriculation). In the Faculty of Science the Department offers an Honours program in Psychology leading to the Honours B.Sc.

The Honours programs are designed for students intending to do graduate work in Psychology. It has been found that students who do not have at least a B average have little chance of being admitted to graduate schools in Psychology and have difficulty completing the Honours thesis.

For any degree in Psychology it is recommended that the equivalent of Grade 13 Mathematics and English be included in the student's High School program, and that prospective Psychology students also include Mathematics 69.107* and either 69.117* or 69.127* in their University program. These courses should be taken during First year or as soon thereafter as is feasible.

Course Requirements

Psychology 49.100 is required of all students wishing to take further courses in the Department. The following are basic "core" courses: Psychology 49.200*, 49.205* (or 49.305), 49.210*, 49.220*, 49.250*, 49.260*, 49.270*, and 49.300* (or 49.301* or 49.302* or 49.303*). In most cases there are more specialized "branching" courses following upon these basic courses.

There is little distinction made between Second and Third year courses in the Department. (Many 200-level courses are taken by students in the Third year and some 300-level courses are taken in the Second.)

All courses from outside the Faculties of Arts, Science and Social Sciences to be offered for credit towards graduation in Psychology degree programs must meet with Departmental approval prior to the time of registration. In the credits counted towards the degree, no student may offer standing in more than seven credits below the 200 level (including Psychology 49.100) in the Major program or in the B.Sc. Honours program, nor more than nine such courses in the B.A. Honours program.

Major or Honours students in the B.A. Program in Psychology may, if they wish, offer Computer Science 95.101* (p. 60) as one of their optional half credits in Psychology (but not to replace any of the specified Psychology courses). Students wishing to take advantage of this option should notify the Psychology Department undergraduate office on the appropriate form within two months of registration in the course.

Grade-Point Average

The Department of Psychology normally calculates grade-point averages on the basis of all Psychology courses taken at Carleton in which standing is offered for the purposes of graduation. The Department does not accept the transfer of letter grades from other universities, excepting courses taken under the terms of reciprocal agreements (see p. 88), although appropriate credit will be granted for acceptable courses taken elsewhere.

Part-time Studies

While students may enrol as part-time students in the B.A. programs in the Psychology Department, they should be aware of the following:

1. the Faculty requirements limiting to seven years the time between completion of the First year requirements and graduation;
2. the impossibility of completing the required Honours courses in the Evening division.

Major Program

This alternative is intended for the student who is not planning a career as a psychologist, but who wishes a liberal arts education with several courses in Psychology.

The requirement for a Major in Psychology is six course credits in Psychology and the maximum allowable is seven Psychology course credits; that is, all students must offer standing in at least eight non-Psychology option credits in their total of fifteen required for the degree.

Students who decide to train for careers as psychologists are advised to transfer to the Honours program not later than the end of the Second year. Students who are considering this possibility should choose courses that are required for Honours Psychology students in the Second year.

The departmental requirements for a Major in Psychology are:

1. Psychology 49.100;
2. Five of Psychology 49.200*, 49.205*, 49.210*, 49.220*, 49.250*, 49.260*, 49.270*, 49.300*, 49.301*, or 49.302* or 49.303* (only one of the latter four courses may be credited towards this requirement);
3. Two and one-half additional course credits in Psychology;
4. At least one full credit in each of two departments or interdisciplinary areas outside of the Faculty of Social Science;
5. A minimum grade-point-average of 4.0 (C-) in all Psychology courses taken at Carleton.

Notes:

Psychology 49.305 may be substituted for 49.205* in 2, in which case only two additional course credits in Psychology are required in 3.

Students who transfer into the Fourth year of the Honours program who do not have credits in statistics and experimental Psychology will not be able to complete the requirements for the degree in one year.

Honours students who are considering reverting to the Major program should not include more than seven Psychology credits in the first three years.

Combined Major

The departmental requirements for a Major program combining Psychology with another discipline are the same as for a Major, with the exception that, under 3 above, only one and one-half additional course credits in Psychology are required, for a minimum offering of five course credits in Psychology. The maximum remains at seven course credits. Note that requirements 4 and 5 above also apply to Combined Majors.

Honours Programs

To teach Psychology at a university, to practise Psychology as a profession, or to conduct independent psychological research, a graduate degree (usually the Ph.D.) is the customary requirement. Several provinces, including Ontario, and many states have laws which require, in effect, that individuals representing themselves as psychologists must have received a Ph.D. in psychological studies.

The Honours programs in Psychology are designed to give students who are preparing for graduate studies in Psychology an opportunity to learn and evaluate the

foundations of the science. They provide adequate preparation for graduate studies leading to a career in Psychology, whatever the student's area of interest.

B.A. with Honours in Psychology

The Candidate for a B.A. with Honours in Psychology must offer standing at the First-year level in the Faculty of Social Sciences and nine credits in Psychology courses, with remaining courses from Psychology or other disciplines (providing not more than twelve Psychology credits are offered for the degree).

The departmental requirements for Honours Psychology are:

1. Psychology 49.100;
2. All of Psychology 49.210*, 49.220*, 49.250*, 49.260* and 49.270*;
3. One of Psychology 49.300*, 49.301*, 49.302* or 49.303*;
4. Psychology 49.305;
5. Psychology 49.200*, and one of 49.201*, 49.202*, 49.203*, 49.204*, or 49.308;
6. One of the following Honours Seminar sequences: 49.315* and 49.316* (Social); 49.325 (Physiological); 49.345* and 49.346* (Community); 49.355* and 49.356* (Developmental); 49.365* and either 49.261* or 49.262* (Personality); 49.375* and 49.376* (Learning);
7. Psychology 49.498;
8. Additional course credits in Psychology to a total of nine credits;
9. At least one full credit in each of two departments or interdisciplinary areas outside of the Faculty of Social Science;
10. A minimum grade point average of 6.0 (C+) in all Psychology courses taken at Carleton.

Notes:

The eleven optional credits may be taken in any approved discipline provided that requirement 9 above is met, and:

1. The total number of Psychology credits is not more than twelve;
2. A total of eleven credits are above the 100 level;
3. All courses from outside the Faculties of Arts, Science and Social Sciences meet with departmental approval.

A student in Honours may transfer, on request, to the Major program at any time and graduate at the end of the third year of studies with a B.A. provided the requirements for the three year Major program are met. Honours students who are considering reverting to the Major program should not include more than seven Psychology credits in the first three years.

Recommended Sequence for B.A. Honours

First Year

Psychology 49.100.

Second Year

1. Psychology 49.200* and four of: Psychology 49.210*, 49.220*, 49.250*, 49.260*, 49.270*;
2. One half credit in Psychology (either the remaining core course listed in 1, or a Psychology option).

Third Year

1. Psychology 49.305;
2. An Honours Seminar sequence: Psychology 49.315*, 49.316*; 49.325; 49.345*, 49.346*; 49.355*, 49.356*; 49.365* and either 49.261* or 49.262*; 49.375*, 49.376*;
3. One of: Psychology 49.300*, 49.301*, 49.302* or 49.303*;
4. One of: Psychology 49.201*, 49.202*, 49.203*, 49.204* or 49.308.

An Honours student may take one of Psychology 49.201*, 49.202*, 49.203*, 49.204* or 49.308 in Second year if the prerequisites are met and such a program choice is approved.

Fourth Year

1. Psychology 49.498;
2. One additional credit in Psychology.

In addition to the required Honours Seminar sequence in the Third year, Honours students should consider taking another (different) Honours Seminar sequence (or half thereof) in the Fourth year.

Combined Honours

All students in Honours programs where Psychology is combined with another discipline must present an Honours Thesis.

The Psychology requirements in Combined Honours include seven credits in Psychology when combined with Anthropology, Economics, Linguistics, Mathematics, Philosophy or Sociology and eight credits in Psychology when combined with any other discipline.

In all cases, requirements 1, 5 and 6 must be offered. Students pursuing Combined Honours in Psychology and any of: Linguistics, Mathematics or Philosophy must meet requirements 1, 4, 5, 6, and 7, and must also present two credits from requirements 2 and 3.

Students wishing to enrol in Combined Honours with Anthropology, Economics or Sociology must declare an area of research concentration at the time of application for the degree program. When Psychology is chosen as the area of research concentration, then the requirements in Psychology are: 1, 4, 5, 6, and 7 plus two appropriate credits from requirements 2 and

3. (Consult the Department for details.) When Psychology is not the area of research concentration, the requirements 1, 2, 3, 5, 6, and 8 must be met (unless Sociology 53.210 is offered, in which case, Psychology 49.210* is omitted and one and a half Psychology option credits must be offered).

B.Sc. with Honours in Psychology

Note:

B.Sc. Honours students are urged to consult the calendar section on General Regulations of the Science Faculty, pp. 355-362.

First Year

1. Mathematics 69.107* and 69.117* or 69.127* (or equivalent prerequisites for 69.250 or for 69.217* and 69.257*/258*);
2. Two of Biology 61.100 or 61.101, Chemistry 65.100, Physics 75.100 or 75.105;
3. Psychology 49.100 as the Social Science elective;
4. One optional credit from Science, Social Sciences or Arts.

Required courses beyond First year, and the sequence in which it is strongly suggested they be taken, are as follows:

Second Year

1. Psychology 49.200*, 49.220*, 49.250* and 49.270*;
2. Mathematics 69.250 (or 69.217* and either 69.258* or 69.257* for students planning to take further courses in Mathematics);
3. One credit from Arts or Social Sciences other than Psychology;
4. One optional credit.

Note:

Students who wish to substitute Psychology 49.305 in 2 must offer in 4 a course above the First-year level in Biology, Mathematics, Chemistry or Physics chosen with the approval of the Department of Psychology.

Third Year

1. One Honours Seminar sequence credit (Psychology 49.325, 49.355* and 49.356*, or 49.375* and 49.376*);
2. One of Psychology 49.201*, 49.202* or 49.204* and one of Psychology 49.300*, 49.301*, 49.302* or 49.303*;
3. One optional credit in Psychology;
4. One credit in Arts or Social Sciences other than Psychology;
5. One credit above the First-year level in Biology, Mathematics, Chemistry or Physics;

Fourth Year

1. Psychology 49.498;
2. One credit in Psychology chosen from the following Science continuation courses: Psychology 49.221*, 49.222*, 49.251*, 49.252*, 49.255*, 49.256*, 49.271*, 49.272*, 49.321*, 49.327*, 49.330*, 49.331*, 49.380*;
3. One optional credit in Psychology;
4. One credit above the First-year level in Biology, Mathematics, Chemistry or Physics;
5. One optional credit.

Criminology and Corrections Concentration

For details see p. 130.

Graduate Program

The Department of Psychology offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

Notes:

1. * indicates a half-credit course.
2. Many of the branching courses have limited enrolment. Pre-registration is therefore strongly recommended.
3. Many half courses are not open after the first week of registration. Registration in Second term half courses should normally be completed during Fall registration.

Psychology 49.100

Introductory Psychology

The course provides a foundation for the scientific understanding of human and animal behaviour. Both biological and social science approaches are considered.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.200*

Introduction to Psychological Research

An introduction to the various research methodologies employed within contemporary psychology. Topics covered may include experimental, observational, case study and archival techniques.

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.201*

Research Methods in Psychology of Learning

A survey of methodological issues in the psychology of learning. The focus is on either human or animal learning. Independent projects are assigned.

Prerequisites: Psychology 49.200* and 49.270*.

Open only to Honours students in Psychology. Limited enrolment.

Day division: Lecture three hours, laboratory three hours a week.

Psychology 49.202*

Research Methods in Child Psychology

A survey of methodological issues in child psychology. Independent projects are assigned.

Prerequisites: Psychology 49.200* and 49.250*.

Open only to Honours students in Psychology. Limited enrolment.

Day division: Lecture/laboratory a minimum of six hours a week.

Psychology 49.203*

Research Methods in Social Psychology

A survey of methodological issues within social psychology. Independent projects are assigned.

Prerequisites: Psychology 49.200* and 49.210*.

Open only to Honours students in Psychology. Limited enrolment.

Day division: Lectures three hours a week, laboratory three hours a week.

Psychology 49.204*

Research Methods in Physiological Psychology

A survey of methodological issues in physiological psychology. Emphasis is upon the study of experimental paradigms commonly used in physiological psychology.

Prerequisites: Psychology 49.200* and 49.220*.

Intended for Honours students in Psychology. (Others must have permission of the Department.) Limited enrolment.

Day division: Laboratory three hours a week, lecture three hours a week.

Psychology 49.205*

Introduction to Psychological Statistics

Basic properties of descriptive statistics, the logic involved in the traditional hypothesis testing approach, and a variety of logical fallacies utilized in generating incorrect conclusions are examined. In particular, students are trained to recognize distorted results and conclusions unwarranted on the basis of empirical results. In addition, the impact of traditional hypothesis testing upon psychological research is examined in relation to its limitations and misuses. The emphasis of the course is upon logic and evaluation rather than techniques *per se*.

Prerequisite: Psychology 49.100.

Day division: Lecture three hours a week.

Psychology 49.210*

Introduction to Social Psychology

Introduction to contemporary theory and research in social psychology. Areas covered include attitude structure and change, small groups and social learning. (Students who wish to substitute Sociology 53.210 for Psychology 49.210* should consult their Psychology Department adviser. Students may not offer both Sociology 53.210 and Psychology 49.210* for credit.)

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.211*

Social Problems

An analysis of one or more social problems from the point of view of social psychology. The problems studied vary from year to year and may include such topics as invasion of privacy, the challenge of leisure, the quality of urban life and work satisfaction.

Prerequisite: Psychology 49.210*. Limited enrolment.

Not offered 1980-81.

Psychology 49.212*

Attitudes

Theory and research in attitude structure and change, attitude development and the relationships between attitudes and behaviour. Some problems in attitude measurement are considered.

Prerequisite: Psychology 49.210*. Limited enrolment.

Day division: Lecture/seminar three hours a week.

Psychology 49.213*

Small Groups

A survey of small group theory and research. Areas covered include leadership and group problem solving.

Prerequisite: Psychology 49.210*. Limited enrolment.

Not offered 1980-81.

Psychology 49.214*

Social Perception

Examination of theory and research related to determinants, consequences and models of a person's perception of people and other socially relevant objects.

Prerequisite: Psychology 49.210*. Limited enrolment.

Evening division: Lecture/seminar three hours a week.

Psychology 49.220*

Biological Foundations of Behaviour

A general introduction to the biological bases of behaviour with particular reference to biological mechanisms associated with sensory and perceptual processes, motivation, emotion, learning and cognition.

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.221*

Comparative Psychology

An introduction to the development of behavioural

capacity from unicellular organisms to man.

Prerequisite: Psychology 49.220*.

Not offered 1980-81.

Psychology 49.222*

Sensory Psychology

The physiological basis of sensation. Topics include sensory mechanisms, neuropsychological bases of perception and psychological phenomena encountered in the various senses.

Prerequisite: Psychology 49.220*.

Not offered 1980-81.

Psychology 49.250*

Foundations of Developmental Psychology

Basic principles of developmental psychology with a concentration on theories and methods. Emphasis is on the psychology of childhood and adolescence. (Students may not offer both Psychology 49.250* and Interdisciplinary 04.201 for credit.)

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Note:

No more than two of the following developmental branching courses may be credited towards the B.A. degree: Psychology 49.251*, 49.252*, 49.253*, 49.254*, 49.257*.

Psychology 49.251*

Psychology of Early Childhood

Development of the child from birth through the pre-school years of life; effect of early experience on later behaviour.

Prerequisite: Psychology 49.250*. Limited enrolment.

Day division: Lecture/seminar three hours a week.

Psychology 49.252*

Psychology of Middle Childhood

Development of the child during the elementary school years.

Prerequisite: Psychology 49.250*. Limited enrolment.

Day division: Lecture/seminar three hours a week.

Psychology 49.253*

Psychology of Adolescence

Psychological growth and development from puberty to maturity. (Students may not offer both Psychology 49.253* and Interdisciplinary 04.201 for credit.)

Prerequisite: Psychology 49.250*. Limited enrolment.

Not offered 1980-81.

Psychology 49.254*

Adulthood

An examination of theories on maturity; the problems, training and adjustments required during adulthood. Classroom material is augmented by projects and special field trips involving adults in the community.

Prerequisite: Psychology 49.250*.

Not offered 1980-81.

Psychology 49.255*

Exceptional Children

Selected topics concerning exceptional children such as mentally retarded, brain damaged, physically handicapped, disturbed and gifted children. (Psychology 49.255* and 49.256* may not both be offered for credit.)

Prerequisite: Psychology 49.250*.

Day division: Lecture three hours a week.

Psychology 49.256*

Behaviour Disorders of Childhood

A review of problems of classification and interpretation. Specific problems covered include early childhood autism, minimal brain dysfunction, learning disabilities and school phobia. (Psychology 49.255* and 49.256* may not both be offered for credit.)

Prerequisite: Psychology 49.250*.

Not offered 1980-81.

Psychology 49.257*

Old Age

An examination of changes in functioning during late adulthood, from biological, psychological and social interaction points of view. Topics covered include attitudes towards the elderly, role changes and losses retirement and leisure, institutional care.

Prerequisite: Psychology 49.250*.

Not offered 1980-81.

Psychology 49.260*

Introduction to the Study of Personality

An introduction to the study of personality. Consideration of problems, methods and theories.

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.261*

Psychoanalytic Theories

Origin and evaluation of psychoanalytic theories with an emphasis on Freud and Jung.

Prerequisite: Psychology 49.250* or 49.260*. Limited enrolment.

Day division: Lecture three hours a week.

Psychology 49.262*

Self Theories

An evaluation of the assumptive bases and research evidence relating to the positions of Rogers, Maslow and others.

Prerequisite: Psychology 49.260*. Limited enrolment.

Not offered 1980-81.

Psychology 49.264*

Abnormal Psychology

History of the concept of behavioural abnormality. Theory and selected research dealing with the nature and etiology of behavioural abnormality.

Prerequisite: Psychology 49.250* or 49.260* or 49.100 and Third-year standing.

Day division: Lecture three hours a week.

Psychology 49.270*

Foundations of Learning

Contemporary approaches to the identification of conditions for learning and retention in men and animals, including a survey of theories, issues, methods and findings.

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.271*

Motivation and Emotion

A discussion of current concepts derived from the experimental study of mechanisms energizing behaviour. Emphasis is placed upon biological-organismic constraints upon behaviour, the interplay between cognitive and biological variables in motivation and emotion and upon recent challenges to "traditional" behaviour theory.

Prerequisite: Psychology 49.270*. Limited enrolment.

Day division: Lecture three hours a week.

Psychology 49.272*

Behaviour Modification

Basic principles of learning and operant conditioning are related to aspects of behavioural analysis including techniques such as systematic desensitization, relaxation and counter-conditioning. Representative problem areas include retardation, obesity, smoking, alcoholism and phobias. (Students may not offer both Psychology 49.272* and 49.341* for credit.)

Prerequisite: Psychology 49.270*.

Evening division: Lecture three hours a week.

Psychology 49.300*

Origins of Modern Psychology

The idea of science and its influence on man's conception of himself from Copernicus to Darwin. Scientific and humanistic influences on the emergence of psychology as an independent discipline in the late nineteenth century.

Prerequisite: Psychology 49.100.

Day division: Lecture/seminar three hours a week.

Psychology 49.301*

Precursors of Psychology

Ideas that shaped the emergence in the modern era of psychology as an independent discipline, as evidenced in man's speculations on his nature and his relations to the universe. Mind and body in ancient Egypt, Greece and Rome. Arabic influences and the Middle Ages. Elizabethan psychology. The case for a science of man.

Prerequisite: Psychology 49.100.

Not offered 1980-81.

Psychology 49.302*

Patterns of Twentieth Century Psychology

Systems and theories that have determined the course of experimental psychology since 1890. The collapse of structuralism and the rise of functional, Gestalt, and connectionist systems, and of conditioning. The be-

haviourist revolution, and the major learning theories of the mid-twentieth century.

Prerequisite: Psychology 49.270*.

Day division: Lecture three hours a week.

Psychology 49.303*

Observation, Description and Explanation in Psychology

Problems of communication, concept formation, and exploration in bio-social science are discussed. The interplay of facts, methods, models, theories and the human values which these serve are also explored.

Prerequisite: Psychology 49.100.

Day division: Lecture three hours a week.

Psychology 49.305

Psychological Statistics and Design

A solid foundation in descriptive techniques, probability theory, parameter estimation, hypothesis testing, linear regression, and correlation is developed. Basic models and their appropriateness in answering different types of research questions are emphasized. Computational procedures are given, but major emphasis is placed upon the decision processes involved in determining which statistical techniques can be applied in relation to different classes of experimental questions. (Successful completion of Psychology 49.305 precludes subsequent enrolment for credit in Psychology 49.205*. Students may not take Psychology 49.205* and 49.305 concurrently.)

Prerequisite: Psychology 49.100.

Day and Evening divisions: Lecture three hours a week.

Psychology 49.308

The Analysis of Individual Behaviour

A review of clinical, psychometric and operant methods in the study of individual behaviour. The contributions of the three approaches are evaluated at the descriptive, predictive and functional levels. Ethical problems and principles are reviewed. Some field and laboratory work is required.

Prerequisites: Two full credits in Psychology, including 49.100 and 49.200*. (A course in statistics is recommended.)

Day division: Lecture/seminar three hours a week.

Psychology 49.315*, 49.316*

Social Psychology II (Honours Seminar), History and Contemporary Theory

A survey in depth of early theoretical and research efforts in experimental social psychology. Attention is directed to the disappearance, reappearance, or continued growth of interest in these areas. Their impact on the various contemporary social psychological theories is considered.

Prerequisites: Psychology 49.200* and 49.210*. Usually open to Third- and Fourth-year Honours students in Psychology.

Note:

The first half course is a prerequisite for the second. Generally the two parts must be taken in the same academic year to meet the Honours requirement.

Day division: Seminar three hours a week.

Psychology 49.321*

Perception

A consideration of data and theory concerning perceptual processes. Such topics as psycho-physical methodology, perception of form and space, and perceptual learning will be discussed.

Prerequisite: Psychology 49.100.

Evening division: Lecture three hours a week.

Psychology 49.325

Physiological Psychology (Honours Seminar)

A detailed consideration of physiological approaches to the study of behaviour.

Prerequisites: Psychology 49.200*, and either Psychology 49.220* or Biology 61.335. Intended for Honours students in at least the Third year.

Day division: Lecture three hours a week.

Psychology 49.327*

Drugs and Behaviour

An introduction to synaptic mechanisms and the arrangements of the transmitter-specific brain systems, followed by a discussion of neuro-pharmacological bases of normal and abnormal behaviour and of the behavioural effects of various classes of psychoactive drugs such as stimulants, tranquilizers, opiates etc.

Prerequisites: Psychology 49.220* and 49.270*. Limited enrolment.

Day division: Lecture/seminar three hours a week.

Psychology 49.330*

Principles of Psychological Testing

What psychological tests are, and how they are developed. Their usefulness and limitations as aids in making decisions about people. The application of testing principles to problems of experimental psychology. The course is designed for those who work with, or plan to work with psychological tests in any setting. Emphasis is on the logic of testing rather than on particular tests.

Prerequisite: Psychology 49.100.

Day division: Lecture/seminar three hours a week.

Psychology 49.331*

Human Differences

The meaning and worth of the evidence as to human differences derived from psychological tests results. Individual differences in intelligence, achievement, aptitudes, and personality. The problems of interpreting measured differences associated with race, sex, age and class. The course examines on the basis of psychometric evidence two contrasting hypotheses, that human potentialities are truly equal and that differences are basic and ineradicable.

Prerequisite: Psychology 49.100.

Day division: Lecture three hours a week.

Psychology 49.340

Personnel Psychology

A review of research and theory within the areas of organizational psychology, psychological testing, and

human factors engineering. While the emphasis in the course is on the basic theory and research, efforts are made to relate the material to problems arising within industrial, governmental and educational organizations.

Prerequisite: Psychology 49.100.

Evening division: Lecture three hours a week.

Psychology 49.341*

Behaviour Modification in Education

Introduction to basic procedures and methods of operant conditioning as they apply to the classroom setting. This course is primarily designed for practising teachers, and a classroom project is required. (Students may not offer both Psychology 49.272* and 49.341* for credit.)

Prerequisite: Psychology 49.100.

Not offered 1980-81.

Psychology 49.342*

Criminal Behaviour

An examination of behavioural approaches to the classification and treatment of offenders. Theories and research relevant to selected patterns of law-breaking and selected offender types are reviewed. The value of behaviour modification and counselling programs within prisons is examined.

Prerequisite: Psychology 49.210* or 49.260*.

Evening division: Lecture/seminar three hours a week.

Psychology 49.343*

Addiction

A critical review of social-psychological theories and research on the acquisition and maintenance of addictive behaviour. The rationale and outcome of treatment programs for the abuse of alcohol, tobacco, the opiates and the amphetamines.

Prerequisites: Two full credits in Psychology including 49.100.

Day division: Lecture/seminar three hours a week.

Psychology 49.344*

Play, Recreation and Sport Psychology

Behavioural and experiential aspects of selected forms of non-work activity are analysed to establish how the activities are to be identified, what functions they serve and what factors control or influence their modes of expression.

Prerequisites: Psychology 49.200* and at least one of Psychology 49.210*, 49.250* or 49.260*. Limited enrolment.

Day division: Lecture/seminar three hours a week.

Psychology 49.345*, 49.346*

Community Psychology (Honours Seminar)

A survey of the major theoretical, methodological and research efforts in community psychology. Major themes include: the analysis of human-social problems with reference to the social context within which behaviour problems are generated, maintained and labelled as problems; and a commitment to systematic assessment and conceptualization, intervention and research/evaluation. Problems of program administra-

tion are considered with reference to the realities of formal and informal decision-making processes within organizations.

Prerequisite: Psychology 49.200*. Usually open to Third- and Fourth-year Honours students in Psychology.

Note:

The first half course is a prerequisite for the second. Generally, the two parts must be taken in the same academic year to meet the Honours requirement.

Evening division: Seminar three hours a week.

Psychology 49.355*, 49.356*

Experimental Child Psychology (Honours Seminar)

Seminar on various theories of human development and related research. Students are required to evaluate and replicate research methods used in selected studies.

Prerequisites: Psychology 49.200*, 49.202*, 49.250* and 49.292*. (The latter may be taken concurrently.) Usually open to Third- and Fourth-year Honours students in Psychology.

Note:

The first half course is a prerequisite for the second. Generally the two parts must be taken in the same academic year to meet the Honours requirement.

Day division: Seminar three hours a week.

Psychology 49.361*

Psychology of Women

An examination of the literature on the psychology of women. Topics to be considered include: theories of female personality development, sex differences in ability and personality, biological influences on female behaviour, female sexuality, sex roles, women's roles throughout the life span.

Prerequisite: At least one of Psychology 49.210*, 49.250* or 49.260*. Limited enrolment.

Not offered 1980-81.

Psychology 49.362*

Transpersonal Psychology

This course represents the viewpoint that the scientific study of direct experience can provide valuable knowledge concerning the nature of human consciousness. Concern is also directed towards understanding techniques for altering consciousness and to systems of thought which make the experiences meaningful.

Prerequisite: Psychology 49.200* or 49.300* or three full credits in Psychology. Limited enrolment.

Not offered 1980-81.

Psychology 49.365*

Investigations in Personality (Honours Seminar)

Seminar on various topics in the area of personality and related research.

Prerequisites: Psychology 49.200* and 49.260*. Open to Third- and Fourth-year Honours students in Psychology.

Day division: Seminar three hours a week.

Psychology 49.375*, 49.376*

Empirical Foundations of Learning (Honours Seminar)

One section deals with the specification of empirical variables in animal learning and with their relation to theoretical structures in accounting for their derivation from simple instrumental and classical conditioning. The other section is concerned with the empirical variables in human learning including the acquisition, transfer and retention of verbal skills, such as short- and long-term memory, serial and paired-associate learning, interference theories.

Prerequisites: Psychology 49.200* and 49.270*. Usually open only to Third- and Fourth-year Honours students in Psychology.

Note:

The first half course is a prerequisite for the second. Generally, the two parts must be taken in the same academic year to meet the Honours requirement.

Day division: Seminar three hours a week.

Psychology 49.380*, 49.382*, 49.384*

Special Topics in Psychology

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration.

A list of this year's topics can be obtained from the Psychology Undergraduate Office (B550 Loeb Building) after March 1.

Psychology 49.386*

Field Course in Animal Behaviour

Offered in the Department of Biology as 61.365*. Only those modules dealing with animal behaviour topics may be offered for Psychology credit. (Departmental permission required.)

Not offered 1980-81.

Psychology 49.391*, 49.393*

Practicum in Community Psychology

This course supplements the theoretical and research orientation of the classroom with supervised field work. Emphasis is equally on gaining applied experience and on active and detailed study of community settings such as correctional institutions and centres for treatment and management of the retarded and the elderly. Readings, discussions, and reports are integrated with the program in the different settings. Research efforts are encouraged.

Prerequisite: Open to Third- and Fourth-year students in Psychology with permission of the Department.

Note:

Psychology 49.393* is open only to students in the Criminology and Corrections program. For placement reasons, pre-registration in this course is strongly recommended.

Schedule to be arranged.

Psychology 49.490*, 49.492*

Independent Study

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Normally students may not offer more than one full credit of independent study in their total program. Prerequisite: Permission of the Department.

Psychology 49.498

Thesis for Honours in Psychology

Candidates for the Honours degree in Psychology are required to present a thesis conducted under the supervision of a faculty adviser. The project may take the form of an experiment, a case study, a survey, archival research, or such other work as meets with the adviser's approval. The thesis is evaluated by both the adviser and the Psychology 49.498 co-ordinator.

Note:

Summer session registration in Psychology 49.498 is available only to students who were officially registered in and attended meetings of the course during the immediately preceding Winter session.

Note:

Faculty regulations concerning the Honours thesis are detailed on pp. 91-92.

Prerequisites: Fourth-year Honours standing in Psychology; Psychology 49.305; 49.200* and one of 49.201*-4* (or 49.308); completion of an Honours Seminar sequence.
Day division.

Summer School and Evening Division Courses

The Department of Psychology cannot guarantee that courses needed to meet the requirements of the B.A. Honours degree or B.Sc. Honours degree will be available in either the Summer session or the Winter Evening session.

Public Administration

School of Public Administration

For details of programs offered by the School see pp. 105-107.

Courses Offered

Public Administration 50.400

Public Administration Honours Seminar

A research seminar for Fourth-year Honours Public Administration students only. The seminar is supported by the active involvement of several faculty members, each committing about three or four weeks to participation in seminar discussions and/or lectures. While the specific content of the course may change each year, the course deals more *extensively* than in any previous year's course with areas or sectors such as the following: the role and management of state enterprise; regulatory processes and outcomes; public sector industrial relations; public sector financial accountability.

Day division: Three hours a week.

Public Administration 50.498

Honours Essay

Tutorial hours arranged.

Public Administration 50.499

Honours Comprehensive Examination

Required in Fourth year for Honours in Public Administration if Honours Essay (Public Administration 50.498) is not written. The Honours Comprehensive Examination examines the students across the discipline bases or areas on which the Honours program is built: (a) Political Science, (b) Economics, (c) Law, (d) Management and Organizational Studies. The examination is held on the third Monday in March. Details and preparatory reading lists can be obtained from the Supervisor of Honours. A grade of B- or better must be achieved.

Department of Religion

Officers of Instruction

Chairman

C. Peter Slater

Professors

David Chung

Robert E. Osborne

Lawrence M. Read

C. Peter Slater

Associate Professors

Nalini Devdas

John P. Dourley

Antonio R. Gualtieri

Robert M. Polzin

Stephen G. Wilson

Assistant Professors

Leonard Librande

Joseph G. Ramisch

Eugene Rothman

General Information

The general purpose of courses offered in this Department is to promote a sensitive and intellectually mature understanding of the basic ideas and concerns of outstanding religious leaders and movements irrespective of whether these coincide or conflict with individual convictions. Religious writings are studied critically, in an attempt to understand their meaning, to grapple with their problems, and to assess their significance both in their original cultural context and for our own situation.

Courses Open to First Year Students

Courses open to First-year students are described on p. 94 of the Calendar. The appropriate introductory course to the study of Religion is 34.100* and any one of the other 100-level half-courses.

Programs of Study

Students who elect Religion as their Major or Honours subject will consult with their respective departmental adviser before registration each year.

Department program advisers are:

Honours, S.G. Wilson

Majors, R.E. Osborne

Main Areas of Study

Religion Courses are offered in three main areas:

1. Philosophical-Theological Studies of Religion: Religion 34.100*, 34.101*, 34.200, 34.201, 34.235, 34.238*, 34.260, 34.265*, 34.266*, 34.280, 34.290*, 34.300*, 34.303*, 34.306, 34.370, 34.390, 34.392, 34.488*, 34.489*, 34.490, 34.492.

2. History of Religion: Jewish and Christian Traditions: Religion 34.102*, 34.103*, 34.104* (in part), 34.107*, 34.219, 34.223*, 34.225, 34.240, 34.270, 34.305, 34.321*, 34.323, 34.330, 34.337, 34.350, 34.378*, 34.379*, 34.390, 34.392, 34.486*, 34.487*, 34.490, 34.492.

3. History of Religion: Other Religious Traditions: Religion 34.104* (in part), 34.105*, 34.106*, 34.203, 34.204, 34.205, 34.206, 34.207, 34.208, 34.245, 34.278, 34.320*, 34.325*, 34.342*, 34.390, 34.392, 34.484*, 34.485*, 34.490, 34.492.

For classification of Religion 34.237* and 34.336* each year, consult the Majors Adviser.

Major Programs

Students majoring in Religion shall acquire six credits in Religion. Of these six credits, at least one credit must be at the more advanced levels, that is, 300 or above. In addition, of these six credits, at least one must be in each of the three main areas of study as set forth above. Courses shall be selected in consultation with the Majors Adviser.

Combined Major Programs

A Major combining Religion with another subject must include at least four credits in Religion. The precise pattern of courses for each student must be approved by the Departmental Majors Adviser.

Honours Programs

Honours in Religion

The Honours program may be entered at the beginning of the First year or in later years or by transfer from the Major program.

Students in the Honours program shall acquire ten credits in Religion. In acquiring six of these credits the student shall fulfill the Majors requirements set forth above. In addition, the student shall acquire four other credits of which two shall be at the 400 level, that is, 34.490 or other 400-level seminars. Courses shall be selected in consultation with the Honours Adviser.

Combined Honours Program

Students enrolled in a Combined Honours program are required to take seven credits in Religion. In acquiring six of these credits the student shall fulfill the Majors requirements set forth above. In addition, the student shall acquire one credit at the 400 level. The precise pattern of courses for each student must be approved by the Departmental Honours Adviser.

Combined Honours in Philosophy and Religion

Philosophy: At least seven credits including: an introductory course or the equivalent; two of Philosophy 32.205, 32.215, 32.225, 32.270, 32.305, 32.380, 32.416* and another half-credit; 32.210 or 32.330; 32.250 or if not already taken 32.380; 32.260 if not already taken as Religion 34.260, in which case another upper-level credit; one full credit or the equivalent at the 400 level.

Religion: Requirements are those listed above for Combined Honours program.

Courses Offered

Note:

In certain cases, notably Religion 34.205* courses listed as being offered in the Evening division, may be scheduled at 4:30 p.m.

Religion 34.100*
Exploring Religious Meaning in Traditional Faith

An introductory study of basic themes in Eastern and Western religious traditions. Topics include mystical experience, faith and reason, contrasting conceptions of God and the world, good and evil, myth and ritual, social and moral values.

Day and Evening divisions, First term: Lecture-discussion periods two hours a week.

C.P. Slater

Religion 34.101*
Exploring Religious Meaning in the Modern World

An introduction to religious themes, attitudes and values in secular life as expressed in contemporary art, literature and social movements. Topics include love and alienation, the meaning of life and death, faith and doubt, truth and relativism, peace and liberation, transcendence and self-realization.

Day and Evening division, Second term: Lecture-discussion periods three hours a week.

J. Dourley

Religion 34.102*
Introduction to the Literature of the Hebrew Bible (Old Testament)

An examination of the books of the Hebrew Bible. Emphasis is given to literary approaches to the text, that is, to the kind of disciplined attention which has

illuminated the manifold examples of world literature through a variety of critical approaches.

Evening division, First term; Day division, Second term: Lecture-discussion periods three hours a week.

R.M. Polzin

Religion 34.103*
Introduction to New Testament Literature

A general survey of New Testament literature. An examination of its background in the Roman world and sectarian Judaism. The formation of the Canon and the Synoptic Problem. The texts focused on are the Gospels, Acts, writings of Paul, the Johannine literature and the Book of Revelation.

Students taking this course are also encouraged to take Religion 34.102*.

Day division, First term; Evening division, First and Second terms: Lecture-discussion periods three hours a week.

R.E. Osborne, S.G. Wilson

Religion 34.104*
Religious Traditions in the Middle East

Common patterns of development in the living religions of the Middle East: Judaism and Islam — with comparative references to Christianity. Their organization, basic beliefs, social and ethical principles and practices.

Evening division, Second term: Lecture-discussion periods three hours a week.

E. Rothman

Religion 34.105*
Hindu Yoga and the Buddhist Middle Way

An introduction to the historical development of methods of liberation cultivated by Hindus and Buddhists in India: their philosophical bases, ethical systems, devotional practices, and techniques of meditation.

Day division, Second term: Lecture-discussion periods three hours a week.

N. Devdas

Religion 34.106*
Religious Thought and Practice in China and Japan

Introductory survey of the Chinese and Japanese religious faiths with emphases on their mythological, philosophical, ritualistic aspects and value systems.

Day division, First and Second terms: Lecture-discussion periods three hours a week.

D. Chung

Religion 34.107*
Christianity

An introduction to Christian thought, Catholic and Protestant, concerning such major issues as the character of God, the role of Christ and the Church, the authority of the Bible, human nature and destiny, the ecumenical and charismatic movements, the ordination of women, and the impact of secular culture.

Day division, First term: Evening division, Second term: Lecture-discussion periods two and one-half hours a week.

C.P. Slater, J. Ramish

Religion 34.200

The Encounter of Science and Religion

The history of the encounter of science and religion from the seventeenth century to the present day. Scientific method and the approach of religion; scientific theories and theological doctrines; science and secular faith.

Not offered 1980-81.

Religion 34.201

Women in Religious Traditions

Feminine symbols and historical attitudes towards women in religion. Themes such as the following are examined: traditional archetypes of women as earth mother, personified wisdom, temptress and virgin; the status of women in major religious traditions both western and eastern; the application of contemporary theories of liberation to the feminist movement.

Evening division: Lecture-discussion periods two hours a week.

N. Devdas, J. Ramisch and others

Religion 34.203

Religion and Art in India, China and Japan

A study of art as an expression of religious ideas and attitudes in India, China and Japan. Slides and films are used to illustrate the relationship between religion and art in the Hindu and Buddhist traditions of India and the Confucian, Taoist and Buddhist (including Zen) traditions of China and Japan. Some of the themes of the course are: religious expression in pre-historic art; myth and symbol in art forms; motifs underlying temple architecture and sculpture; the relationship between religious ideas and theories of art, iconography and the place of art in religious practices.

Prerequisite: Religion 34.105* or 34.106* or permission of the Department.

Day division: Lecture-discussion periods three hours a week.

D. Chung, N. Devdas

Religion 34.204

The Hindu Tradition: Studies in the Nature of Human Consciousness

A survey of the concepts of consciousness and yogic techniques developed in the Hindu schools of thought, with special emphasis on Vedanta; the use of mythology and symbolism in Hindu practice; a reinterpretation of Yoga in the modern Hindu tradition.

Not offered 1980-81.

Religion 34.205

The Buddhist Middle Way: Its Indian Developments

A survey of the concepts and techniques of meditation developed in Indian Buddhism from its origin until the twelfth century A.D.; an introduction to Buddhist art and mythology; a brief account of Tantric Buddhism in India and Tibet.

Evening division: Lecture-discussion periods three hours a week.

N. Devdas

Religion 34.206

Religions and Philosophies of East Asia

A study of the history and thought of Confucianism, Taoism, Mahayana Buddhism including Zen, and Shinto, in China and Japan, with intensive readings in their classical texts in translation and contemporary literature.

Not offered 1980-81.

Religion 34.207

Ancient Near Eastern and Graeco-Roman Religions

An investigation of selected writings in English translation from Egypt, Mesopotamia, and Israel. The writings studied include narratives, myths, wisdom literature, hymns and poetry. Major themes of this literature include: the world of the gods; the creation of the universe; friendship; the inevitability of death; how to succeed in business and life. This is followed by a study of selected topics in Graeco-Roman religion, such as Homeric religion, chthonic cults, the Sophists, astrology, ruler cults, mystery religions and gnosticism.

Day division: Lecture-discussion periods two hours a week.

R. Polzin, S.G. Wilson

Religion 34.208

Islam

A historical survey of the Muslim religious tradition. The subjects chosen for special study are the following: (1) the life and work of Muhammad; (2) the Koran; (3) aspects of the Islamic intellectual tradition, law, philosophy, theology and mysticism; (4) the basic beliefs and practices of Muslims. The goal throughout is to achieve an understanding of the ways in which Muslims have articulated, developed and dealt with major issues.

Day division: Lecture-discussion periods two hours a week.

L. Librande

Religion 34.219

Life, Thought and Wisdom in Ancient Israel

An examination of the major methods used by scholars in studying the Hebrew Bible (i.e., source criticism, form criticism, and tradition history) and how these relate to new approaches such as literary or structural analysis. Topics include creation and myth, Israel's patriarchs, the exodus from Egypt, revelation at Sinai, the occupation of Canaan, tensions between religious faith and personal experience, God and the presence of suffering in the world, rules for success in life and business, the religious sceptic, the problems of suicide and the delights of human love.

Not offered 1980-81.

Religion 34.223*

Between the Testaments

A study of the period from about 400 B.C. to 100 A.D.: the history, movements, and ideas crucial to the development of Judaism and Christianity, as documented

especially in the writings which were not included in the Bible. Consideration of wisdom literature, apocalyptic writings, historical works and Rabbinical literature. Special attention is given to the Dead Sea Scrolls. Day division, First term: Lecture-discussion periods two hours a week.

S.G. Wilson

Religion 34.225

The Life and Teaching of Jesus

The course is concerned with a systematic study of the available records of the life of Jesus. Class periods are mainly taken up with free class discussions of successive sections of the gospel parallels of Matthew, Mark and Luke. There are accompanying lectures and readings on the historical context of the life of Jesus and on the milieu within which the records developed.

Day division: Seminar three hours a week.

R.E. Osborne

Religion 34.235

Religion and Contemporary Moral Issues

An analysis of the nature of religious ethics, both the explicit moral principles and rules of various religious traditions, and the general moral perspectives generated by religious images of ultimate reality, history, human nature and the physical world. In the light of this, contemporary moral issues such as the following are examined: cultural integrity (e.g., Indian, Inuit, Québécois), violent liberation and just war, crime and punishment, sexuality, role of men and women, marriage, abortion, alienation in modern society, drugs, economic order and conflict, ecology and pollution. Prerequisite: Any other Religion course or permission of the Department.

Not offered 1980-81.

Religion 34.237*

Selected Topics in Religion

Topic for 1980-81: Religious Cults and Spiritual Movements in North America. A historical and critical study of recent alternatives to traditional religions, such as Hare Krishna, Scientology and the Charismatics.

Day division, Second term: Lecture-discussion periods two hours a week.

J. Devdas, J. Dourley, C.P. Slater

Religion 34.238*

Death and Afterlife

The meaning of death and afterlife in some religious traditions and secular philosophies with emphasis on Christian, Hindu and Buddhist expressions. (Students are reminded of a complementary course in the Second term, Philosophy 32.246*.)

Day division, First term: Lecture-discussion periods two hours a week.

J. Devdas, C.P. Slater

Religion 34.240

Judaism and the Jewish People

An introduction to Judaism and the Jewish people from the destruction of the Second Temple in 70 C.E.

until the present day in Europe and America. A broad historical survey of the religion, culture and civilization of the Jews in the East and the West during the Rabbinic age, the Middle Ages and the modern period. Special attention is given to basic beliefs and practices as well as to trends and movements important to contemporary Judaism.

Evening division: Lecture-discussion periods two hours a week.

E. Rothman

Religion 34.245

History of the Ancient Near East

An introduction to the major societies, cultures and religious traditions of the ancient Near East before Islam through a survey of the history of Mesopotamia, Anatolia, Egypt, Arabia, Canaan, Persia-Parthia, the Hellenistic kingdoms and the Eastern Roman Empire. Not offered 1980-81.

Religion 34.260

Philosophy of Religion

Offered in the Department of Philosophy as Philosophy 32.260.

Religion 34.265*

Historic Figures in the Psychology of Religion

Discussion of religiously significant texts from the works of William James, Sigmund Freud and C.G. Jung.

Prerequisite: One course in Religion or Psychology or permission of the Department.

Day division, Second term: Lecture-discussion periods two hours a week.

J. Dourley

Religion 34.266*

Contemporary Psychologies of Religion

An examination of developmental, experimental, humanistic and existential theories in psychology as these shed light on religious thought, behaviour and institutions.

Prerequisite: One course in Religion or Psychology or permission of the Department.

Not offered 1980-81.

Religion 34.270

The Development of Christian Thought

The historical and cultural development of selected aspects of Christian thought from its origins to the modern period. Problems considered are the early shift from a semitic to a hellenistic culture; the beginnings of the church as an institution; the development of thinking about Jesus in the early councils; conciliarism and other theories on the nature of the church; medieval efforts at reform; issues in the Protestant Reformation and its aftermath. Analysis of the way change and development have taken place in Christianity is also included.

Not offered 1980-81.

Religion 34.278

The Middle East: 1798 to the Present

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on the mutual discovery of East and West, the search for identity, the impact of colonialism and international rivalry, and social, religious and cultural change within a continuing tradition. (Offered in the Department of History as History 24.278.)

Day division: Lecture-discussion periods two hours a week.

E. Rothman

Religion 34.280

Modern Religious Thought

An examination of the major currents and developments of religious and philosophical thought among Protestants and Catholics in the nineteenth and twentieth centuries. Protestant developments are traced from the Kantian critique to the present and Catholic thought from its response to the French Revolution up to and beyond Vatican II.

Prerequisite: One course in Religion or Philosophy. Not offered 1980-81.

Religion 34.290*

Religion in Canada

A study of religious traditions in Canadian history and religious aspects of Canadian culture, with particular reference to major issues and movements in modern times, such as the Women's Christian Temperance Union, reactions to the Great Depression, Canada's participation in World War II, and cross-cultural conflicts among immigrants and native peoples.

Prerequisite: One full credit in Religion, Canadian Studies or permission of the Department. Not offered 1980-81.

Religion 34.300*

Faith and Atheism

A discussion of modern responses to positivistic, existentialist and Marxist critiques of traditional religious thought.

Prerequisite: Religion 34.101* or permission of the Department. Not offered 1980-81.

Religion 34.303*

Christ in Recent Christian Thought

An examination of recent theological literature on Christ and discussion of particular issues, such as the "New Quest" of the historical Jesus, reinterpretations of Chalcedon, the use of models in understanding redemption, the resurrection as a religious experience, and Jesus' presence in the Church.

Prerequisite: Religion 34.103* or permission of the Department. Not offered 1980-81.

Religion 34.305

Cultural and Intellectual History of the Middle Ages

Offered in the Department of History as History 24.305. Not offered 1980-81.

Religion 34.306

Models of God and Man in the Thought of Paul Tillich, Teilhard de Chardin and C.G. Jung

The course focuses upon a common problematic central to these modern thinkers with backgrounds in theology, science and psychology, namely the nature of God's presence to and activity in nature and life. The course exposes the concerns and pressures operative in their formulation of the question of God and with the similarities and disparities of their responses. Special attention is given to their models of the relationship of divine immanence and transcendence and to the consequent shape of the major Christian symbols within these models.

Prerequisite: One of Religion 34.100*, 34.200, 34.265*, 34.280, 34.300*.

Not offered 1980-81.

Religion 34.320*

Selected Problems in Indian Thought

Topic for 1980-81: Mythology and Symbolism in the Hindu Tradition. A discussion of myths and symbols of Siva, Visnu, and Mahadevi highlighting philosophic concepts reflected in them and their value for transforming personality in the psychological processes of yoga. Slide discussions, lectures and class discussion. Day division, First term: Three hours a week.

N. Devdas

Religion 34.321*

The Hebrew Prophets

A study of the major and minor prophetic books of the Hebrew Bible. Emphasis is given to the texts themselves and the various interpretations which historical and literary scholars have proposed. Attention is given to the Ancient Near Eastern context out of which Israelite prophecy arose.

Prerequisite: Religion 34.102* or permission of the Department.

Day division, Second term: Seminar two hours a week.

R.M. Polzin

Religion 34.323

Religion and the State, Europe 1815-1965

Offered in the Department of History as History 24.323.

Day division: Three hours a week.

H.A. MacDougall

Religion 34.325*

Zen (Ch'an) Buddhism

Historical development of Zen Buddhism; discussion of the writings of Zen masters and Zen literature in general; thematic discussions of Zen approaches to Satori; appreciation of Zen paintings and calligraphy. Day division, First term: Seminar three hours a week.

D. Chung

Religion 34.330

The Life and Thought of Paul

Paul's relation to the Old Testament, Rabbinic Judaism, and Hellenism; the mission to the Gentiles

the "mysticism" of Paul; central ideas such as justification by faith, predestination, the Holy Spirit, the Church. Consideration of the situation and message of each of Paul's writings.

Prerequisite: Religion 34.103* or 34.225 or permission of the Department.

Not offered 1980-81.

Religion 34.336*

Selected Topics in Religion

Not offered 1980-81.

Religion 34.337

The Johannine Literature

The course considers interpretations of the Fourth Gospel and the Johannine Epistles involving a close examination of the texts and related problems, such as historical value, symbolic features.

Prerequisite: Religion 34.103* or 34.225 or permission of the Department.

Evening division: Seminar three hours a week.

R.E. Osborne

Religion 34.342*

Selected Topics in Islam

Topic for 1980-81: A study of the development and intent of Muslim mysticism in classical and medieval times, with special emphasis on sufism's central concepts and techniques as described in the original texts.

Prerequisite: Course on Islam or permission of the Department.

Day division, Summer: Seminar three hours a week.

L. Librande

Religion 34.350

Modern Jewish Thought

Modern Jewish thought in response to the Enlightenment, the Zionist and Reform movements, the Holocaust and the establishment of Israel. Special attention is given to such authors as Mendelssohn, Hirsch, Herzl, Rosenzweig and Fackenheim. Different themes are studied each year the seminar is taught.

Prerequisite: Religion 34.104* or 34.240 or permission of the Department.

Not offered 1980-81.

Religion 34.370

Theories and Methods in the Study of Religion

This course analyses and seeks a constructive resolution to theoretical and methodological problems such as the following: the definition of religion; understanding the faith of others; the role of presuppositions in interpreting religious data; multidisciplinary approaches (historical, phenomenological, sociological, psychological, theological, dialogical) and the question of a distinctive method for religious studies; theories of the nature and origins of religion; religious diversity and the question of religious truth.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Religion 34.378*

The Reformation Era in European History, 1409-1648

Offered in the Department of History as History 24.378*.

Day division, Second term.

D.G. Bowen

Religion 34.379*

Christian Churches and the European Expansion Overseas

Not offered 1980-81.

Religion 34.390

Selected Problems in Interpretation

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Department.

Day or Evening division: By arrangement with individual instructors.

Religion 34.484*

Seminar in Comparative Religion: The World of Islam in the Eyes of Al-Ghazali (d.1111)

A study of one of the central scholars of Islam, dealing with his translated works. His numerous perspectives (legal, theological, philosophical, political and mystical) on Islam are analysed.

Prerequisite: Permission of the Department. Normally only Fourth-year Honours or Combined Honours students will be admitted.

Day division, First term: Seminar three hours a week.

L. Librande

Religion 34.485*

Seminar in Comparative Religion: State, Society and Religion in the Middle East

A study of state, society and religion in the Middle East from the end of the eighteenth century until the present day. Beginning with the impact of the West on the Middle East, there is an investigation of the ongoing changes in the region. Areas such as the processes of westernization, religious modernization, secularization and the continuing impact of religion on state and society are discussed.

Prerequisite: Permission of the Department. Normally only Fourth-year Honours or Combined Honours students will be admitted.

Day division, Second term: Seminar three hours a week.

E. Rothman

Religion 34.486*

Seminar in Biblical and Ancient Near Eastern Studies: Jewish-Christian Relations in the First Two Centuries C.E.

Prerequisite: Permission of the Department. Normally only Fourth-year Honours or Combined Honours students are admitted.

Day division, First term: Seminar three hours a week.

S.G. Wilson

Religion 34.487*

Seminar in Biblical and Ancient Near Eastern Studies: The Framework of Deuteronomy — 2 Kings: A Literary View

This seminar assumes the unity of Deuteronomy — 2 Kings and attempts to describe key features of its framework. This involves a synchronic study, unencumbered by prior diachronic assumptions, and directed toward a compositional analysis. Russian literary critics such as M. Bakhtin and B. Uspensky provide a theoretical basis for this approach.

Day division, Second term: Seminar three hours a week.

R.M. Polzin

Religion 34.488*

Seminar in Modern Religious Thought and Culture: Understanding Bernard Lonergan

A study of one of Canada's foremost philosophical and religious thinkers. The course focuses on his understanding of religious experience and knowledge, as well as his basic contributions to an analysis of human understanding.

Prerequisite: Permission of the Department. Normally only Fourth-year Honours or Combined Honours students are admitted.

Day division, First term: Seminar three hours a week.

J. Ramisch

Religion 34.489*

Seminar in Modern Religious Thought and Culture: Religion and Psyche in the Psychology of C.G. Jung

An examination of Jung's psychology under his rubric of the psyche as matrix of religious experience, and the religious implications of his psychology in itself and in its relations of complementarity or contradiction with other psychologies and theological anthropologies.

Prerequisite: Permission of the Department. Normally only Fourth-year Honours or Combined Honours students are admitted.

Day division, Second term: Seminar three hours a week.

J. Dourley

Religion 34.490

Thesis (Equivalent to two courses)

Prerequisite: Permission of the Department.

Day or Evening division: Hours to be arranged.

Religion 34.492

Thesis (Equivalent to one course)

Prerequisite: Permission of the Department.

Day or Evening division: Hours to be arranged.

■ **Language Courses**

Language courses are intended primarily for students wishing to specialize in a particular religious tradition. Courses taken at the 200 level or above will be mainly independent study under the supervision of a member of the Department. Students interested in taking these courses should consult the department chairman.

Religion 34.115

Introduction to Hebrew

An introduction to Hebrew with emphasis on reading comprehension and conversation. Language tapes are used in conjunction with the textbook. Restricted to beginners in the language.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Religion 34.116

Introduction to Arabic

An introduction to modern standard Arabic with emphasis on reading. The course is restricted to beginners.

Day division: Lecture periods three hours a week.

L. Librande

Religion 34.117

Introduction to Sanskrit

Introduction to the fundamentals of the language with emphasis on reading and writing skills.

Day division: Three hours a week.

N. Devdas

Religion 34.215

Intermediate Hebrew

Readings in Hebrew literature derived from classical and modern sources are analysed according to style, content and structure. The seminar in large part is conducted in Hebrew.

Not offered 1980-81.

Religion 34.216

Intermediate Arabic

Second-level study of modern standard Arabic grammar and style through readings and exercises.

Prerequisite: Religion 34.116, or permission of the Department.

Not offered 1980-81.

Religion 34.217

Readings in Sanskrit Literature

A study of selected readings from early Hindu literature.

Prerequisites: Religion 34.105* and 34.117.

Day division: Lecture periods three hours a week.

N. Devdas

Religion 34.218

New Testament Greek

A study of the form and content of prescribed readings from the New Testament in Greek with guidance in translation and exegesis.

Prerequisites: Greek 15.115 and Religion 34.103* and 34.120.

Day division: Lecture periods three hours a week.

S.G. Wilson

Religion 34.392

Language Tutorial

An advanced study of a language in which one of the religious traditions has been transmitted.

Day or Evening division: Hours to be arranged.

Officers of Instruction

Chairman
B.W. Jones

Professor
V.I. Grebenschikov

Associate Professors
G.R. Barratt
G. Melnikov
E. Stichling
P. Varnai

Instructors
A. Lewinson
H. Van de Lagemaat

The Russian Program

The Department of Russian offers a flexible undergraduate program. It has been designed to satisfy a range of different professional and academic interests. There are three areas of concentration: **(a)** Russian literature; **(b)** Soviet period studies; **(c)** language and linguistics, with the option of translation training. Students will normally follow a basic course sequence; Russian 36.100, 36.150, 36.200 and 36.300. Honours students include 36.201* and 36.301* in their programs.

The credit requirements, after the completion of Russian 36.100 (Introductory Russian), or the equivalent, are as follows: Major, 6; Combined Majors, 5; Honours, 9; Combined Honours, 7.

Major Program

The Major program in Russian, after the completion of Russian 36.100, consists of Russian 36.150; two credits selected from Russian 36.200, 36.203, 36.250; three credits in Russian chosen from the 200-level or above.

The Combined Major, after the completion of Russian 36.100, consists of Russian 36.150; two credits selected from Russian 36.200, 36.203, 36.250; two credits in Russian chosen from the 200 level or above.

Students are advised to select their course program, including optional courses, in close consultation with the Department.

Honours Programs

Students should bear in mind that certain courses offered by the Russian Department have a *literary* emphasis (e.g. Russian 36.250, 36.450), while others (e.g. Russian 36.303, 36.415) have a *linguistic* emphasis. Students should plan their program in accordance with their interests, within the framework given below. They should do so in consultation with the Department.

The Honours Program in Russian will include the following courses:

1. Russian 36.150;
2. Russian 36.201* and two additional credits at the 200 level;
3. Russian 36.301* and one additional credit at the 300 level;
4. A credit at the 400 level;
5. Three additional credits at the 300 or 400 level for *Honours in Russian* or one additional credit at the 300 or 400 level for *Combined Honours*.

Combined Honours programs are possible with a number of other subjects, among them History, Political Science, Journalism, English, French, Italian, German, Spanish and Linguistics. The Department also participates in the Comparative Literature program and the Soviet and East European Studies program.

Combined Honours in Russian and Linguistics, Translation Option

A special Combined Honours program is also available to students contemplating a career in Russian to English translation. In this program, the following courses are required:

Linguistics

- 29.100 Introduction to Linguistics
- 29.301* Phonetics
- 29.303* Language Analysis
- 29.304* Grammatical Theory
- 29.485 Structures of English
- 29.490 Tutorial in Linguistics. Tutorial consists obligatorily of directed readings in the theory of translation.

Russian

- 36.150 Intermediate Russian
- 36.200 Advanced Russian
- 36.203 Russian Grammar
- 36.300 Russian Style and Composition
- 36.303 Russian Translation
- 36.491 Tutorial. For students in this program a practicum in translation, with analysis and criticism of selected professional translations.
- 36.499 Honours Essay. For students in this program an annotated translation of a substantial

piece of text, with oral defence before a panel consisting of a member of the Russian Department, a member of the Linguistics Department, and a professional translator from the Association of Translators and Interpreters of Ontario or the Department of the Secretary of State.

French

At least a 100-level credit.

At least five of the remaining course credits shall be chosen from offerings in the following areas: Mass Communication (27.111 Introduction to Mass Communication), Accounting, Economics, Geography, Political Science, Law, Sociology-Anthropology, Biology, Chemistry, Geology, Physics, Computer Science, French (above the 100 level). Russian literature courses may also be selected. Students should discuss with their advisers the different consequences of taking either a sequence of courses in one subject or introductory courses in a number of subjects. With permission, the choice of disciplines may be extended to suit special needs.

Special Interest Courses

1. Scientific Russian: The Department offers a special course of reading and translation for students in the natural and social sciences and engineering, and for others interested in the rapid acquisition of a reading skill in technical Russian. Russian 36.110 is specifically designed to meet the needs of such students. The course may serve as an option for students in any program.

2. Business Russian: The Department offers two half-credit courses in Business Russian, 36.120* and 36.121*, to assist the university student and the businessman to acquire in a comparatively short time the linguistic knowledge, the business terminology and language skills needed for commercial transactions. The two half-credits concentrate on essential linguistic features of Russian as used in commercial documents, and students will advance to a level enabling them to read, translate and write material in areas related to trade and commerce. No previous knowledge of Russian is necessary to enrol in Russian 36.120*. Students with some knowledge of Russian may enrol directly in Russian 36.121* with the permission of the instructor.

3. Russian Literature in English Translation (Russian 36.260) and **Studies in Russian Life and Culture** (Russian 36.360): Conducted entirely in English, these two courses are designed as Arts or Social Science options for all students wishing to broaden their general knowledge of culture and literature.

4. Other Slavic Languages: The Department also offers additional options in other Slavic languages: (a) A basic sequence of Ukrainian 36.116 and 36.216

(beginning and advanced, both in Evening division); (b) Bulgarian with an introduction to Macedonian, Old Slavonic, and Serbo-Croat, offered on request if an instructor is available. Hungarian is also offered. See comments, under Slavic and East European Languages (p. 263).

5. East-European Literature in English Translation: The Department offers Russian 36.290, Twentieth-Century East-European Literature in English Translation, as a survey of the recent literature of Czechoslovakia, Poland and Hungary. All texts are read in English translation. This course is centered around authors whose concerns extend beyond national boundaries, who are politically and socially revealing, and artistically innovative. The specific Calendar description should be consulted.

Laboratory Facilities

The University's language laboratory provides facilities for drill in aural comprehension. Students may take extra practice in periods in open hours. The language laboratory is used in the following courses: Russian 36.100, 36.150, Ukrainian 36.116. Oral examinations are given in these courses and in Russian 36.201* and 36.301*.

Departmental Reading Lists

Departmental reading lists will be available from the Secretary, Room 1301, Arts Tower (telephone 231-4488/89). These reading lists give additional information about courses, including texts, instructors, and, as available, the scheduling of courses.

Courses Offered

Russian 36.100

Introductory Russian

Introductory course, the aim of which is to ensure an adequate grasp of the mechanics of the language and basic skills in oral comprehension. Reading of texts. One hour per week devoted exclusively to Russian conversation in class. Oral practice in the language laboratory.

Day and Evening divisions: Four hours a week plus one laboratory period a week.

Also offered in Summer Evening session.

Russian 36.110

Scientific Russian

This course is designed to meet the needs of all students in the social and natural sciences, and engineering, and of graduate students in any year who require a reading knowledge of Russian scientific or

technical literature. It includes the essentials of grammar, a basic vocabulary, and the reading of simple texts.

Day division: Three hours a week.

Russian 36.120*

Business Russian I

Introductory sequence of the Business Russian course. Essential linguistic features of Russian as used in business and commerce documents: business letters, offers, orders and confirmations, contracts, complaints, advertising and enquiries.

Evening division, First term: Three hours a week.

Russian 36.121*

Business Russian II

Continuation of the sequence of Business Russian I. The course consists of reading, translation, discussion and writing in Russian of documents, reports and articles in the following related areas: the economic geography of the USSR and Eastern Europe, commercial relations between the USSR and Canada, Soviet trade organizations, trade exhibitions, banking in Eastern Europe.

Prerequisite: Russian 36.120* or an equivalent competence in essentials of Russian.

Evening division, Second term: Three hours a week.

Russian 36.150

Intermediate Russian

Continuation of the basic sequence. Grammar studies, composition, oral drill, reading of selected poetry and prose.

Prerequisite: Russian 36.100 or equivalent.

Day and Evening divisions: Three hours a week, plus one laboratory period.

Also offered in Summer Evening session.

Russian 36.200

Advanced Russian

Continuation of the basic Russian sequence. Introduction to prose composition and essay writing; further development of comprehension and self-expression in Russian.

Prerequisite: Russian 36.150 or equivalent.

Day division: Three hours a week.

Russian 36.201*

Russian Conversation

Conversation and discussion of current topics with special emphasis on everyday Russian. Occasional written work.

Prerequisite: Russian 36.150, or permission of the Department (may be taken concurrently with Russian 36.150).

Evening division, First term: Three hours a week.

Russian 36.203

Russian Grammar

A systematic review of Russian grammar: selected problems of phonetics and phonology, morphology

and syntax, with an introduction to structural and transformational models of Modern Russian.

Prerequisite: Russian 36.150 or equivalent.

Evening division: Three hours a week.

Russian 36.250

Russian Classics of the Nineteenth Century

Introduction to Russian literature. A study of representative original works of Russian prose, poetry and drama of the period: Pushkin, Lermontov, Gogol, Chekhov and others.

Prerequisite: Russian 36.150 or equivalent.

Day division: Three hours a week.

Russian 36.260

Russian Literature in English Translation — Nineteenth and Twentieth Centuries

A study of selected works of Russian and Soviet literature in the general context of European literature and against their social and political background. It includes works by Pushkin, Gogol, Turgenev, Leo Tolstoy, Dostoyevsky, Chekhov, Gorky, Sholokhov, Pasternak, Solzhenitsyn. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Evening division: Three hours a week.

Russian 36.290

Twentieth-Century East-European Literature in English Translation

This course focuses on the literature of three countries: Czechoslovakia, Hungary and Poland. Following an introduction to the pertinent literary traditions, representative twentieth-century works are treated in detail. Post-World War II developments receive further emphasis. All texts are read in English translations. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Day division: Three hours a week.

Russian 36.300

Russian Style and Composition

Continuation of the basic Russian sequence. Introduction to stylistics and expressive writing. Analysis of semantic and structural peculiarities of Modern Russian.

Prerequisite: Russian 36.200 or equivalent.

Day division: Three hours a week.

Russian 36.301*

Advanced Russian Conversation

An advanced sequel to Russian 36.201*. May be taken concurrently with Russian 36.200.

Prerequisite: Russian 36.201* or permission of the Department.

Evening division, Second term: Three hours a week.

Russian 36.303

Russian Translation

A course of contrastive grammar and stylistics of Russian, English and French. Theory of translation, and extensive exercises in text translation from and into Russian.

Prerequisite: Russian 36.203 or equivalent.

Day division: Three hours a week.

Russian 36.330

Russian Early Classics

A study of the main literary trends in the new Russian literature, and the most important representatives of Sentimentalism, Romanticism and early Realism: Karamzin, Fonvizin, Griboyedov, Krylov, Joukovsky, Pushkin, Lermontov, Gogol. Introduction to Russian versification.

Prerequisite: Russian 36.200 or 36.250.

Offered every other year.

Not offered 1980-81.

Russian 36.350

Literature and the Russian Revolution

A study of the Russian literature of the revolutionary years (1905-35) and the major trends and experiments in the shaping of a new literature: Symbolism, Futurism, Proletarian Culture, Socialist Realism. Authors studied: M. Gorky, S. Essenin, V. Mayakovsky, A. Blok, I. Babel, M. Bulgarkov, N. Ostrovski, A. Tolstoy.

Prerequisite: Russian 36.200 or 36.250.

Offered every other year.

Not offered 1980-81.

Russian 36.360

Studies in Russian Life and Culture (in English)

Under this general title the Department offers special courses aimed at students wishing to enlarge their knowledge and understanding of Russia and its culture. All texts are read in English. This course does not count as a credit in Russian but can serve as an Arts option for all students.

Prerequisite: Permission of the Department.

Not offered 1980-81.

Russian 36.399

Introduction to Methods of Research

Tutorial on topics of Russian or comparative language and literature, aimed at training in methods of scholarly research and Slavic bibliography.

Russian 36.415

History of the Russian Language

The place of modern Russian among the Indo-European languages. The historical development of Russian from Old Slavic to the present. Selected studies in historical grammar and analytical reading of selected medieval and modern texts.

Prerequisite: Russian 36.203 or equivalent.

Not offered 1980-81.

Russian 36.430

Russian Realism of the Nineteenth Century

A concentrated study of selected works by Turgenev, Dostoyevsky, Tolstoy and Chekhov.

Prerequisite: A Russian course at the 300 level.

Offered every other year.

Tutorial (consult Department).

Russian 36.440

Contemporary Russian Drama

A study of selected dramatic literature from the Russian revolution to the present against the social and political backgrounds of the times. Major playwrights studied include V. Mayakovsky, N. Pogodin, A. Afinogenov, A. Volodin, V. Rosoz and others.

Prerequisite: Russian 36.250 or a Russian course at the 300 level.

Evening division: Two hours a week.

Russian 36.450

Contemporary Russian Literature

A study of representative works of contemporary Soviet Russian writers against the social and political backgrounds of the period. Emphasis is on writers after 1950, including I. Ehrenburg, A. Solzhenitsyn, V. Rasputin, F. Abramov, V. Shukshin.

Prerequisite: Russian 36.250 or a Russian course at the 300 level.

Offered every other year.

Tutorial (consult Department).

Russian 36.460

Old Russian Literature

Survey of Kievan and Muscovite periods. Emphasis on eighteenth-century prose.

Prerequisite: A Russian course at the 300 level.

Not offered 1980-81.

Russian 36.470

Modern Russian Literature

A study of selected prose of the Russian Nobel Prize winners: Bunin, Pasternak, Sholokhov and Solzhenitsyn.

Prerequisite: A Russian course at the 300 level.

Offered every other year.

Not offered 1980-81.

Russian 36.490*

Special Subject

Tutorial on topics of Russian literature or linguistics to be assigned by the instructor in consultation with the student.

Russian 36.491

Tutorial

As Russian 36.490*, but offered for full-course credit with a corresponding enlargement of scope and assignments. (Also listed as Comparative Literature 17.506, Styles and Periods.) For students in the Translation Option, a practicum in translation, with analysis and criticism of selected professional translations.

Russian 36.493*

Translation Tutorial

This course is intended for students in the Institute of Soviet and East European Studies, although other students may enrol with the permission of the Department. It offers work in translation to and from Russian, and the objectives of the course are co-ordinated with the specific needs of students in the Institute.

Russian 36.499

Honours Essay

An option for final-year Honours students. For students in the Translation Option, an annotated translation of a substantial piece of text, with oral defence before a panel consisting of a member of the Russian Department, a member of the Linguistics Department, and a professional translator.

■ **Ukrainian**

Ukrainian 36.116

Introductory Ukrainian

An introductory course designed to give students the fundamentals of written and spoken Ukrainian. Grammar, reading, and oral practice. Language laboratory. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Evening division: Three hours a week and laboratory session.

Ukrainian 36.216

Advanced Ukrainian

Grammar review, composition, advanced conversation. Reading of selected prose and poetry representing the most typical features of Ukrainian culture in the nineteenth and twentieth centuries. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Ukrainian 36.116 or permission of the Department.

Offered every other year.

Evening division: Three hours a week.

■ **Slavic and East-European Languages**

Slavic 36.390

Slavic (or Hungarian) Language Tutorial

A study in a Slavic or East-European language, other than Russian or Ukrainian, which may be useful for research information or translation activities to any graduate or undergraduate student. The course consists of a two-hour meeting per week with an instructor, and it may require intensive laboratory work. The choice of the language in each particular year will depend on the students' demand and the availability of the instructor. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Russian 36.150 or 36.110 or Ukrainian 36.216 or equivalent or permission of the Department.

Note:

Students interested in Slavic literatures should note the entry for Russian 36.290, Twentieth-Century East-European Literature in English Translation.

Department of Sociology and Anthropology

Officers of Instruction

Chairman

Dennis P. Forcese

Assistant Chairman

Francis G. Vallee

Co-ordinator of Graduate Program

Gordon Irving

Co-ordinator of Honours Anthropology Program

Bruce Cox

Co-ordinator of Honours Sociology Program

Terrance Nosanchuk

Co-ordinator of Interdisciplinary Major Program

Valda Blundell

Professors

Muni Frumhartz

John Harp

Gordon Irving

Judah Matras

Bruce A. McFarlane

Gertrud Neuwirth

Adam Podgorecki

Victor F. Valentine

Francis G. Vallee

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Associate Professors

Valda Blundell

Monica Boyd

Hyman Burshtyn

Wallace Clement

John Cove

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Charles Gordon

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Charles Laughlin

Hugh McRoberts

Joseph Manyoni

Terrance Nosanchuk

Iain Prattis

Stephen Richer

George Ross

Derek Smith

Allan D. Steeves

James A. Vantour

Assistant Professors

Jacques Chevalier

Colin Farmer

Florence J. Hughes

Barclay Johnson

Jared Keil

John Myles

Dennis Olsen

Caryll Steffens

Sessional Lecturer

Graham Rowley

General Information

The Department of Sociology and Anthropology offers three undergraduate programs:

Major in Sociology-Anthropology

Honours in Anthropology

Honours in Sociology

All of these programs can be taken either as principal concentrations or in combination with other disciplines. Details of these programs are outlined below.

The several types of courses offered by the Department are indicated by the following numerical prefixes:

53 Sociology

54 Anthropology

56 Sociology-Anthropology

Providing they meet the requirements of the particular program for which they are registered, students may select their courses from any or all of these.

Major Programs

Major Program

1. Students in the Major Program must successfully complete *six* courses in the Sociology-Anthropology field, including those courses listed below:

(a) One of Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100 (See *Note* below);

(b) Sociology-Anthropology 56.200*;

(c) *Either* Sociology 53.201* or Anthropology 54.201*;

(d) One chosen from: Sociology-Anthropology 56.305, Sociology 53.306, Anthropology 54.310;

(e) One further credit in Sociology and/or Anthropology at the 300 level.

2. Students may not count more than nine credits, or their equivalent, in Sociology and/or Anthropology toward a Major B.A. Degree;

3. Final-year students with the required standing, may be given permission to take a course at the Fourth-year level. It is also expected that some work will be taken in related disciplines in the Social Sciences;

4. Students are expected to maintain a minimum average of C- in the Major program.

The entire course program should be worked out in consultation with the Co-ordinator of Majors.

Note:

Students may take both Sociology 53.100 and Anthropology 54.100, but only one may be counted toward the Major degree; the other will be counted as an option.

Combined Major Programs

Students combining Sociology-Anthropology with another discipline will successfully complete *four* credits including those courses listed below:

1. One of Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100 (see *Note* below);
2. *Either* Sociology-Anthropology 56.200* and Sociology 53.201* or Anthropology 54.201*, *or* one course chosen from: Sociology-Anthropology 56.305, Sociology 53.306, Anthropology 54.310;
3. One further credit in Sociology and/or Anthropology at the 300 level.

Combined Major programs should be worked out in consultation with departments concerned, and may include other requirements additional to those listed above.

Note:

A student may take both Sociology 53.100 and Anthropology 54.100, but only one may be counted toward the Major degree. The other will be counted as an option.

Honours Programs

General

Honours programs may be entered from the Honours First year in the Social Sciences (see p. 91) or by transfer from the Major course if the appropriate standing has been attained (C+). Students taking Honours in Sociology or Anthropology are expected to meet the general University regulations governing the degree and to fulfill certain additional requirements depending on the program selected. The Practicum or the Essay will be considered as a course in determining a student's final standing. The following programs are available.

Sociology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Sociology) or members of the Honours Program Committee (Sociology). The requirements are:

1. Nine credits, or their equivalent, in Sociology and/or Anthropology, including:
 - (a) One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;

- (b) Sociology-Anthropology 56.200* and one of either Sociology 53.201* or Anthropology 54.201*; plus Sociology 53.370;

- (c) Sociology-Anthropology 56.305 and Sociology 53.306 (one of these should be taken in the Second year);

- (d) Two half-course seminars or one full-course seminar at the 400 or 500 level;

- (e) Sociology 53.495 (Honours Practicum) or 53.498 (Honours Essay);

- (f) Two additional full courses, or their equivalent, within the Department.

2. A Minor consisting of three credits in one of the following: Economics, Geography, History, Philosophy, Political Science or Psychology. Alternative Minors will also be considered;

3. It is recommended that students take Mathematics 69.107* and 69.127*, preferably during their First year or as soon as possible thereafter;

4. A maximum of twelve credits in Sociology and Anthropology may be counted toward the degree of B.A. with Honours in Sociology;

5. A total of twenty credits or their equivalent is required.

Anthropology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Anthropology) or members of the Honours Program Committee (Anthropology). The requirements are:

1. Nine credits, or their equivalent, in Sociology and/or Anthropology, including:

- (a) One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;

- (b) Sociology-Anthropology 56.200* plus either Anthropology 54.201* or Sociology 53.201*, Anthropology 54.310, 54.410 and 54.495;

- (c) Two additional half course seminars or one full-course seminar at the 400 or 500 level;

- (d) Three additional credits, or their equivalent, within the Department;

2. A maximum of twelve credits in Sociology and Anthropology may be counted toward the degree of B.A. with Honours in Anthropology;

3. A total of twenty credits or their equivalent is required.

Combined Honours in Sociology

The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Sociology) or members of the Honours Program Committee (Sociology), as well as with the equivalent person(s) in the other discipline.

Combined Honours with a considerable number of disciplines is possible and will be worked out upon request. The following programs are examples:

Combined Honours in Sociology and Political Science

Required courses in Sociology and/or Anthropology include:

1. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100;
2. One of the following methods sequences:
 (a) In the Second year, Political Science 47.270, in the Third year, Sociology 53.370; or
 (b) In the Second year, Sociology-Anthropology 56.200* plus one of 53.201* or 54.201*; in the Third year, Political Science 47.470.
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498, and two additional credits in Sociology, one of which must be taken at the 400 or 500 level. If the honours essay is written in Political Science: three additional credits in Sociology, one of which must be taken at the 400 or 500 level.

Note:

Students should also consult the statement of the Department of Political Science.

Combined Honours in Sociology and Economics

Required courses in Sociology and/or Anthropology include:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200* and either Sociology 53.201* or Anthropology 54.201*, followed by Sociology 53.370 or Economics 43.220;
3. Sociology-Anthropology 56.305 or Sociology 53.306, (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.495 or 53.498; and two additional credits in Sociology, one of which must be at the 400 or 500 level. Otherwise, three additional courses in Sociology are required, one of which must be at the 400 or 500 level.

Combined Honours in Sociology and Journalism

Students may select a course pattern which will lead, at their option, to either the degree of B.A. with Combined Honours in Journalism and Sociology, or B.J. with Sociology. At the end of the Third year, students will elect to write their Honours Essay in either Sociology or Journalism. Should students select Sociology, they will be awarded the degree of B.A. upon graduation. Students selecting Journalism will be awarded the degree of B.J. (with Sociology) upon graduation.

The combined Honours program in Sociology and Journalism requires a total of twenty-one credits. The required courses in the Sociology and/or Anthropology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200*; either Sociology 53.201* or Anthropology 54.201*; and Sociology 53.370;
3. Sociology-Anthropology 56.305 or Sociology 53.306, (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Journalism, students are required to successfully complete three additional courses in Sociology (not including Sociology-Anthropology 56.211), one of which must be at the 400 or 500 level.

Combined Honours in Sociology and Law

The required credits in the Sociology and/or Anthropology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200*; and either Sociology 53.201* or Anthropology 54.201*;
3. Sociology-Anthropology 56.305 or Sociology 53.306, (if the Honours Essay is written in Sociology 53.306 is recommended);
4. If the Honours Essay is written in Sociology, students should take Sociology 53.495 or 53.498; and three additional courses in Sociology, one of which must be at the 400 or 500 level. If the Honours Essay is written in Law, students should take four additional courses in Sociology, one of which must be at the 400 or 500 level.

Combined Honours in Sociology and Psychology

Required credits in Sociology include:

1. Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100;
2. Sociology-Anthropology 56.200*, and either Sociology 53.201* or Anthropology 54.201*;
3. Sociology-Anthropology 56.305 or Sociology 53.306 (if the Honours Essay is written in Sociology, 53.306 is recommended);
4. If the Honours Essay is written in Sociology: Sociology 53.370; 53.495 or 53.498; and two additional courses in Sociology, one of which must be taken at the 400 or 500 level. If the Honours Essay is written in Psychology: Psychology 49.305 and four additional courses in Sociology, one of which must be taken at the 400 or 500 level.

Note:

Students should also consult the statement of the Department of Psychology.

Combined Honours in Anthropology

Students intending to enter an Honours Program combining Anthropology with another discipline should take one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 and the introductory course in the other discipline in their First year. A minimum of six credits in Anthropology and/or Sociology is required. The entire selection of courses is to be worked out in close consultation with the Co-ordinator of Honours (Anthropology) or members of the Honours Program Committee (Anthropology) as well as the equivalent person(s) in the other discipline.

Combined Honours with a considerable number of other disciplines is possible and will be worked out upon request.

Ordinarily, the requirements will include:

1. Six credits in Anthropology and/or Sociology, including:
 - (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100;
 - (b) Sociology-Anthropology 56.200*, and either Sociology 53.201* or Anthropology 54.201*;
 - (c) Anthropology 54.310.
2. Where the Honours Practicum is taken in Anthropology, Anthropology 54.410 and 54.495 plus one additional credit at the 400 or 500 level are required;
3. Where the Honours Essay is written in another discipline, three additional full courses, or equivalent, must be taken in Sociology and Anthropology, one of them at the 400 or 500 level.

Criminology and Corrections Concentration

For details see p. 130.

Graduate Program

The Department offers studies leading to the following graduate degrees: M.A. in Sociology, M.A. in Social Anthropology and Ph.D. in Sociology. For further details consult the Graduate Studies and Research Calendar. Final-year Honours students may take one or more graduate seminars with the permission of the Department.

Prerequisite

The normal prerequisite for courses taken beyond the 100 level is one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100. An introductory course in Sociology or Anthropology taken at

Carleton University prior to 1972-73, or at another university, will ordinarily satisfy the prerequisite requirement. Other students may be admitted with permission of the Department.

Course-Related Tutorials

Students within the Department may include among their courses one or more tutorials. Further information is available from the Office of the Chairman.

Written permission from the Chairman of the Sociology and Anthropology Department is necessary before registration in these courses can take place.

Courses Offered

Sociology 53.100

Introduction to Sociology

An introduction to the comparative study of social groups, classes and institutions. The main emphasis is on industrialized societies with special attention given to Canadian society.

Day and Evening divisions: Lectures and discussion three hours a week.

Anthropology 54.100

Introduction to Anthropology

An introduction to some of the major anthropological perspectives through which human cultures and behaviour can be understood. The comparative focus utilizes material drawn primarily from non-industrial societies.

Day and Evening divisions: Lectures and discussion three hours a week.

Sociology-Anthropology 56.100

Principles of Comparative Social Structure: Sociology and Anthropology

An introduction to the comparative study of human society from the parallel perspective of sociology and social anthropology. The principal focus is on continuity and change in the development of relatively simple and highly complex societies.

Day division: Lectures and discussion three hours a week.

Sociology-Anthropology 56.200*

Fundamentals of Social Research

An introduction to general issues in social research. Topics include the logic of research, problems of research design, fundamental techniques of data collection in sociology and anthropology, and problems in the ethics of research.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100.

Day and Evening divisions, First term: Lectures and workshop three hours a week.

V. Blundell, H. Burshytyn

Sociology 53.201*

Introduction to Sociological Research

The study of qualitative and quantitative methods of data collection. Various techniques of data analysis are discussed.

Prerequisite: Sociology-Anthropology 56.200*.

Day and Evening divisions, Second term: Lectures and workshop three hours a week.

H. Burshytyn, S. Richer

Anthropology 54.201*

Introduction to Anthropological Research

The study of classic ethnographics from the anthropological literature. Both traditional and contemporary ethnographic methods are considered.

Prerequisite: Sociology-Anthropology 56.200*.

Day division, Second term: Lectures and workshop three hours a week.

J. Manyoni

Anthropology 54.206*

Cultural Adaptations and the Environment

This course examines various modes of subsistence in terms of their historical and ecological significance. Topics include the relationships between humans, social institutions and the natural environment in hunting and gathering, horticultural, and pastoral societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

(Precludes additional credit for Anthropology 54.206* taken prior to 1980.)

Day division, First term: Lectures and discussion three hours a week.

B. Cox

Anthropology 54.207*

Anthropology and Human Adaptation

This course applies the principles of anthropological ecology to problems of the present day, such as overpopulation, environmental deterioration and malnutrition. Generally, it deals with cases arising from contact between tribal groups and industrial nation states.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

(Precludes additional credit for Anthropology 54.207* taken prior to 1980.)

Day division, Second term: Lectures and discussion three hours a week.

B. Cox

Sociology 53.210

Social Psychology

The study of the relationship between the individual and the social system. Emphasis is on integrating

individual and social approaches. How does a group influence psychological processes (attitudes, cognitions, motivations, etc.)? How does an individual influence a group? Group processes such as socialization, symbolic interaction, coercion, conformity, leadership, cohesion, etc., are studied.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, introductory Psychology, or permission of the Department.

Day division: Lectures and discussion three hours a week.

C. Steffens

Sociology-Anthropology 56.211

The Mass Media in Modern Society

An examination of the historical development and current operation of the major mass media, with a view to relating developments to the larger social structure. Emphasis is on the relationship between the media and the structure of Canadian society. (Also listed as Mass Communication 27.211.)

Prerequisite: One of Mass Communication 27.111, Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or permission of the Department or School.

M. Frumhartz

Sociology-Anthropology 56.220

Canadian Society

The course focuses on the study of Canadian society as an ongoing social system. Alternative theoretical perspectives are developed and examined for the interpretation they provide of recurrent social issues. Special attention is given to persistence and change in regional, ethnic, class and sex-role differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

Anthropology 54.225

Prehistoric Anthropology, Cultural and Biological Evolution of Man

An examination, from an evolutionary point of view, of the physical anthropology and archeology of early man, the origins of man, the development of technology and of complex institutions, and the nature of racial differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Lectures two hours a week and workshop one hour a week.

V. Blundell

Anthropology 54.230

Social Systems of Non-Western Societies

A study of social anthropology with an emphasis on cross-cultural comparisons of a sample of world

societies in terms of kinship, political, economic, religious and symbolic systems.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology-Anthropology 56.235

Ethnic Group Relations

An anthropological and sociological study of minority groups and of ethnic and "race" relations in multi-cultural societies. The course focuses on intergroup processes within a comparative framework.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology-Anthropology 56.241

Kinship, Marriage and the Family

The course entails a cross-cultural analysis of kinship and kin groups, an examination of the historical development of the family in western society and a general survey of contemporary family life and its relationship to the total society.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

G. Irving

Sociology-Anthropology 56.243

Religion and Society

A broad survey of religious institutions, with comparative and historical emphases. Examination is made of the major social, cultural, and psychological theories of religion, as well as of the methodological problems associated with the subject matter. Attention is also placed on a range of topics such as totemism, social change, utopian communities, secularization, and the relationship of religion to other social institutions and processes.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

D. Smith

Sociology 53.245

The Sociology of Work: Occupations and Professions

A study of the sociological aspects of work, with particular emphasis on the historical development and contemporary organization of occupations and professions, career patterns and recruitment, and manpower problems in developed and developing countries.

Prerequisite: One of Sociology 53.100, Anthropology

54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

B. McFarlane

Sociology 53.246*

Industrial Sociology

An enquiry into the development, structure and prospects of industrial society and post-industrial society, including the relation of industrial institutions to the rest of society, and the internal organization of industrial institutions, including problems of management, labour and union relations.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

G. Ross

Sociology 53.247*

Women in Society

An enquiry into the historical and contemporary roots of sex-role determination. A comparative analysis of the position of women in various social formations is attempted, in conjunction with an examination of various theoretical perspectives concerning women's societal role. Emphasis is on the Canadian context.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Anthropology 54.248*

The Anthropology of Sex Roles

An examination of male and female roles and statuses in relation to societal factors, such as economics, decision-making, and ideology. Emphasis is on the study of women in traditional, and changing, non-western pre-industrial societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J. Keil

Sociology 53.251*

Introduction to Population Studies

An introduction to the basic principles of demography. Past and present population growth, and the determinants of population growth, are examined. Inter-relations among demographic, social, cultural and economic factors are investigated. Where possible, Canadian demographic material is discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology-Anthropology 56.253*

Introduction to Human Ecology

The course focuses on interrelationships among population, organization, environment and technology, and on the relationship between man and the natural environment from the perspective of resource use, management and policy. (When this course is given in more than one section, the sections are likely to differ in the disciplinary approach that is emphasized.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

J. de Vries

Sociology 53.254*

Urban Sociology

An examination of issues related to man and the urban environment, including the historical process of urbanization, the rural-urban transition, and the diffusion of urban values and life styles. Some attention is paid to contemporary urban problems, such as urban renewal, pollution and the pressures of the urban environment on social institutions.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term and Evening division, Second term: Lectures and discussion three hours a week.

A. Steeves

Sociology 53.255*

Sociology of Deviance

An analysis of the relation of deviant behaviour to the functioning of social systems: conditions and types of deviance from the institutional order, the evasion of rules, the social roles of deviants, the structure of control, punishment and cure.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term and Evening division, Second term: Lectures and discussion three hours a week.

H. Burshlyn

Sociology 53.256*

Police in Society

An examination of the organization and activities of the police in industrialized societies. Particular attention is devoted to Canadian information, and the themes of social control, police discretion, and the relations of police to a democratic society.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100. Closed to students who were enrolled in Sociology-Anthropology 56.286* in 1975 or 1976.

Day division, Second term: Lectures and discussion three hours a week.

D. Forcese

Sociology 53.260*

Community

The community is studied as a localized social system in a larger social setting. This involves analysis of demographic and ecological factors as well as a variety of community based institutions. Special attention is given to decision-making, community planning and development.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

A. Steeves

Sociology 53.270

Criminology

The study of criminal behaviour in modern society with special emphasis on interdisciplinary theories of causation, the relationship of crime and the social structure, and policies and programs by which society reacts to crime.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day and Evening divisions.

K. Hatt

Sociology-Anthropology 56.285*

Selected Topics

Selected topics in Sociology and/or Anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1980-81: Sociology of Aging and the Elderly. An investigation of the implications of population aging for Canadian social structure and the major issues, theories and research regarding aging and the elderly in contemporary society. The implications of Canada's changing age structure for such institutions as the economy, the polity and the family are examined in a comparative perspective. Social policy issues related to aspects of the aging process such as retirement and pensions are discussed. Special attention is given to a detailed examination of the composition and living conditions of Canada's elderly population.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Evening division, First term: Lectures and discussion three hours a week.

J. Matras

Sociology-Anthropology 56.286*

Selected Topics

Selected topics in Sociology and/or Anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1980-81: Law and Society. A sociological examination of law and legal processes as social phenomena, of law in the context of social norms, of law in interaction with other aspects of the social system, as the state

and the economy. This is done from a cross-cultural perspective, and includes discussion of methods in sociology of law. (Students interested in the legal and philosophical aspects of this topic should consider registering in Law 51.210, and 51.311*.)

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

A. Podgorecki

Sociology-Anthropology 56.291* and 56.292*

Course-Related Tutorials

See explanatory note on p. 267.

Anthropology 54.301*

Phonetics

Offered as Linguistics 29.301*

Anthropology 54.302*

Phonology

Offered as Linguistics 29.302*

Anthropology 54.303*

Language Analysis

Offered as Linguistics 29.303*

Anthropology 54.304*

Grammar

Offered as Linguistics 29.304*

Sociology-Anthropology 56.305

The Development of Sociological and Anthropological Thought

The development of sociological and anthropological thought since the end of the eighteenth century. Various theoretical approaches are placed within their historical, social and intellectual contexts. The writings of key figures such as Comte, Spencer, Marx, Durkheim, Weber, Malinowski and Radcliffe-Brown are examined and analysed as illustrations of the development of theoretical approaches in both disciplines.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

J. Cove

Sociology 53.306

Contemporary Theoretical Sociology

Consideration is given to the major contemporary theories, such as structural functionalism, social behaviourism, symbolic interactionism, conflict theory and the theory of social action. Apart from the principal substantive issues raised by each of these theories, certain methodological problems associated with the formulation of theories and the relations of theory to research are discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Evening division: Lectures and discussion three hours a week.

G. Neuwirth

Anthropology 54.310

Theory and Methodology in Anthropology

A consideration of the nature of anthropological theory and of explanation in the anthropological context. Some attention is devoted to previous formulations relevant to contemporary anthropology, but the emphasis is on the contemporary formulation of cultural ecology, ecological determinism, evolutionism and structural-functionalism. Special attention is given to the interdependence of theory and methods of research.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

I. Prattis

Sociology-Anthropology 56.311

Advanced Studies of the Mass Media

An examination of the philosophical and theoretical foundations of mass-communication studies. The course is an analysis of the content of selected theories with a view to assessing the contributions they make to the understanding of mass communication. (Also listed as Mass Communication 27.311.)

Prerequisite: One of Mass Communication 27.211, Journalism 28.200, Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100, or permission of the Department or School.

Day division: Lectures and discussion three hours a week.

Sociology 53.312*

Science and Society

An historical and comparative approach to the analysis of science and society. Such topics as the institutionalization and professionalization of science; the organizational context of scientific work; relations between science and other institutions; the norms of science, and the role and career of the scientist are considered.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.315

Sociology of Education

An examination of educational institutions; their interplay with one another and with other social institutions; the structure of educational opportunity; the school and university seen as organizations; individual and social effects of education; the sociology of learning. The approach is generally comparative and includes a

consideration of contemporary critiques of the educational system. (If the course is given in more than one section, the sections will probably differ in their emphasis, whether in terms of the level of the educational system or in relation to the selection of questions and problems.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Evening division: Lectures and discussion three hours a week.

J. Harp

Anthropology 54.318*

The Prehistory of New World Indians and Eskimos

An examination of the prehistory of the New World, with particular emphasis upon North America. Topics covered include the peopling of the New World, the origins of agriculture and civilization in this area, and the regional culture histories of Indian and Eskimo societies. Special attention is given to the prehistoric roots of contemporary Indian and Eskimo societies. Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

D. Smith

Anthropology 54.319*

The Ethnography of New World Indians and Eskimos

An examination of traditional New World Indian and Eskimo societies focusing upon their varying social and cultural adaptations. The course includes a survey of cultural and linguistic areas of North America. Consideration is given to social, economic, and political organization, as well as to the role of religion, mythology and art. Particular attention is paid to the native peoples of Canada.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

B. Cox

Sociology-Anthropology 56.320

French Canada and Quebec Society

An analysis of the economic, cultural and political aspects of present-day French Canada and Quebec society, with special reference to the interplay of three fundamental themes, i.e., class, culture and nation. Particular attention is also given to the diversity of theoretical perspectives and modes of analysis which prevail in the study of the contemporary situation. A reading knowledge of French is helpful, but is not a prerequisite for the course.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

J. Chevalier

Anthropology 54.331*

Kinship and Culture

This course examines the nature of peoples' ideas concerning procreation, incest, and social relationships, and variations in descent, marriage, families, and kinship terminologies cross-culturally. The course also relates aspects of kinship to other societal institutions and ideologies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Anthropology 54.332*

Political Anthropology

The focus of this course is on the social consequences of incorporating tribal or ethnic groups into a nation-state. It considers factors that make for political order in stateless societies; peace, ritual war, witchcraft and feud in such societies, and present-day problems such as aboriginal and native rights.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Anthropology 54.333*

Economic Anthropology

The course is concerned with the effects that decision strategies, production and distribution mechanisms have on social organization in primitive and peasant societies. Attention is given to the fundamental controversies which have divided scholars in economic anthropology. Particular issues of gift exchange, conspicuous consumption, market structure, etc., are examined in terms of their structural implications for other societal institutions and use of resources. Neo-Marxist approaches to economy, dependency and articulation tie economic anthropology to the sociology of development.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Anthropology 54.334*

Symbolic Systems

The ability to create and use symbols is a defining characteristic of human thought. Anthropological perspectives are employed to examine symbols in a variety of contexts, such as magical and religious rituals, mythology, art, and politics. The focus is on how men understand themselves and their world through the medium of symbols.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

J. Chevalier

Anthropology 54.335***Prehistoric Settlement Patterns**

Archeological analyses of cultural choices regulating the utilization of space. The relation of settlement patterns to social, economic, and other factors is considered.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

D. Smith

Sociology 53.338**Social Response to the Built Environment**

An examination from a social perspective of the interaction between humans and the buildings, towns and cities they construct. Emphasis will be placed upon the functional, cognitive and expressive aspects of these interactions, at various levels of social organization and in various settings. Particular consideration is given to the institution, and to the nature of design as a social action.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.345***Stratification and Mobility**

An examination of the principal theoretical and empirical questions in the study of social class and social mobility in complex societies. The bases and forms of inequality are examined with the aid of data from Canada, England, the United States, the Soviet Union, China, Japan and a number of other societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

D. Forcese

Sociology 53.347***Power**

The principal concern of the course is the nature of power in human groups — its sources, forms and processes. Particular attention is paid to community and national elites and power structures.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

W. Clement

Sociology 53.348***Collective Behaviour and Social Movements**

An enquiry into the process of collective action as part of social change at various levels. Topics discussed

include crowds, fashions, labour, political, and religious movements, rebellion and revolution.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

G. Ross

Sociology 53.350***Political Behaviour**

An examination of sociological contributions to the study of political behaviour and of the relations between politics and the social structure, both in Canada and in other societies. Emphasis is placed upon political socialization, the class basis of politics, conflict, mass movements and change.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

M. Frumhartz

Sociology 53.351***Methods of Population Analysis**

An introduction to demographic techniques. Problems in the collection and analysis of population data, such as population censuses and vital registration. Emphasis is placed upon the application of "demographic" methods (e.g., cohort analysis) to other areas of sociological investigation.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.355**Bureaucracy and Society**

An examination of the origins and development of large-scale bureaucratic structures in the industrialized nations. Particular attention is given to a critical evaluation of the bureaucratic thesis, namely that bureaucracy operating in the context of large-scale complex organizations is the distinguishing characteristic and ultimate basis of power in contemporary societies. This is accomplished by means of a detailed study of bureaucratic structures and processes in the modern business enterprise, the state and other public and private organizations.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology-Anthropology 56.358**Conflict and Society**

A comparative study of the strategies used by a number of western and non-western societies to resolve or promote conflict. Examination is made of the social conditions that generate conflict, and the ideas

developed by different cultural groups to explain war, rebellion and revolution. Students are encouraged to do original research. (Sociology-Anthropology 56.200* plus either Sociology 53.201* or Anthropology 54.201* or its equivalent in other departments are recommended as a suitable preparation for this course.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

J. Manyoni

Sociology-Anthropology 56.360

Social Change and Modernization

Comparative analysis of social change with particular emphasis on the processes associated with industrialization and their impact on social structure. Problems of internal and external obstacles to modernization; the relations of different social groups to economic development.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and discussion three hours a week.

A. Steeves

Anthropology 54.362

Contemporary Societies of Africa

Anthropological perspectives in the study of contemporary African societies. Special attention is paid to processes of change in traditional life styles through migration, urbanization and westernization. The main theme is modernization.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.370

Research Design and Data Analysis

An integrated approach to the problems involved in the analysis of quantitative data. Research design and procedure and statistical inference are studied. (Successful completion of Sociology-Anthropology 56.200* plus either Sociology 53.201* or Anthropology 54.201* or equivalent in other departments is highly recommended as suitable preparation for this course.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division: Lectures and workshop four hours a week.

T. Nosanchuk

Anthropology 54.371*

Anthropological Linguistics

A review of theory and methods of anthropological linguistics. Emphasis is on the interdependence

between language and culture. The study is undertaken on a comparative basis and includes both pre-literate and literate groups.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Anthropology 54.372*

Psychological Anthropology

A cross-cultural study of certain psychological processes such as cognition, learning and perception; an examination of the interdependence between culture and personality.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.373*

Correctional Policy

A description of Canadian correctional administration including prison, parole and probation with an emphasis on conflicting ideologies and the dynamics of policy-making decisions. Consideration is given to the relationship between correctional policy and other aspects of the changing society.

Prerequisite: Sociology 53.255* or 53.270, or permission of the Department.

Evening division, First and Second terms: Lectures and discussion three hours a week.

D. Demers

Anthropology 54.373*

Urban Anthropology

This seminar enables students to pursue their interests in contemporary urban studies from the viewpoint of urban anthropology. Students do individual research projects on an urban group of their choice and the different findings are then compared and contrasted with contemporary urban anthropological theory and ethnography. Original participant observation of urban groups is encouraged where possible.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Not offered 1980-81.

Sociology 53.375*

Medical Sociology

A study of social factors related to health and illness, the illness role, relationships between patients and health practitioners, and the organization of health services. Attention is given to both the social psychology of health and illness and the structure of organizations concerned with health care.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Sociology 53.377*

Sociology of Welfare Institutions

A study of the emergence and position of welfare institutions in contemporary society with special emphasis on their relationship to social change, ideological conflicts and forms of organization.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Day division, Second term: Lectures and discussion three hours a week.

G. Irving

Sociology 53.380

Social Policy

A study of social policy in relation to social change and issues in Canadian society. This involves the policy orientation and role of the social sciences, especially sociology, in assessing the socio-cultural background, the processes and the consequences of social policy. Contemporary Canadian issues are considered as case studies in social policy.

Prerequisites: Introductory Sociology or Anthropology and at least one additional full Second- or Third-year course in Sociology, or equivalent courses in related disciplines, or permission of the Department.

Day division: Lectures and discussion three hours a week.

A. Podgorecki

Sociology 53.386*

Field Placement: Criminology and Corrections Concentration

Experience in an agency setting which provides the basis for translating the academic dimension into practical involvement in various aspects of corrections and policy.

Prerequisite: Open only to those students formally registered in the Criminology and Corrections concentration.

First and Second terms.

K. Hatt

Sociology 53.388*

An Examination of Current Issues in Criminal Justice

A seminar focusing on conflicting goals among components of the criminal justice system, the theory and practice of correctional institutions and their alternatives, and offenders' rights.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, and Third year standing, or permission of the Department.

Day division, First term: Lectures and discussion three hours a week.

A. Podgorecki

Sociology-Anthropology 56.391* and 56.392*

Course-Related Tutorials

See explanatory note on p. 267.

Sociology 53.400

Sociological Analysis

An advanced examination of approaches and problems in the comparative analysis of social structure and social process. The course is specifically intended for senior students with little or no background in sociology. Prerequisite: Third- or Fourth-year Honours standing or Qualifying year graduate standing or permission of the Department. Majors and Honours students and Combined Majors and Honours students within the Department may not take this course for credit toward their degree.

Not offered 1980-81.

Anthropology 54.410

The Ethnographic Enterprise

An examination of the premises underlying particular cases of empirical work in Anthropology. The value of various anthropological paradigms for the solution of standard ethnographic problems.

Prerequisite: Final-year Honours standing, or permission of the Department.

Day division: Seminars two hours a week.

J. Keil

Sociology-Anthropology 56.411

Selected Problems in Mass Communication Analysis

In a given year, selected policies and practices of media and regulatory institutions are considered. Issues may include the nature of the political process, national sovereignty, national identity or cultural values, in relation to mass communications. (Also listed as Mass Communication 27.411.)

Prerequisite: Fourth-year standing in Honours Mass Communication or permission of the School of Journalism or the Department of Sociology and Anthropology.

Day division: Seminar three hours a week.

T. McPhail (*Journalism*)

Sociology-Anthropology 56.421*

Topics in Quebec Society

Selected topics in Quebec society, more advanced than those treated in the regular course program. The choice of topic varies from year to year. Topic for 1980-81: Ethnicity and Class Structure in Quebec. A thorough analysis of ethnic and class differentiations in contemporary Quebec, with a particular emphasis on the major theoretical issues related to this subject matter. This course also considers the phenomenon of nationalism as a central theme in the understanding of Quebec society, and current debates regarding the courses and functions of the latter.

Prerequisite: Fourth-year Honours standing, or permission of the Department. A reading knowledge of French is required.

Day division, Second term: Seminar two hours a week.

J. Chevalier

Sociology 53.443

Selected Problems in the Uses of Sociology

An examination of selected problems in the relation between Sociology as a discipline and the uses to which it has been and may be put. The latter include, for example, social criticism and controversy, popular sociology, social/public policy, applied sociology, experimentation and evaluation, and social intervention. The seminar enquires into the sociological contributions to one or another of these activities, the problems on translation that are encountered and the criteria by which they may be assessed. Consideration is also given to the shaping of the discipline that takes place in the process.

Prerequisite: Final-year Honours standing, or permission of the Department.

Not offered 1980-81.

Sociology 53.445*

Modern National Societies as Total Systems

An examination of modern societies as total systems with particular reference to their more significant modes of variation. Consideration is given both to the available theoretical models and to selected empirical cases.

Prerequisite: Final-year Honours standing, or permission of the Department.

Not offered 1980-81.

Sociology 53.446*

Selected Problems in Stratification and Mobility

An examination of selected theoretical and empirical problems in the study of social stratification and mobility. Topics discussed may include: recent developments in the theory and methodology of social stratification and mobility, cross-cultural comparisons, and changes over time in social and ethnic stratification in selected societies.

Prerequisites: Fourth-year Honours or Qualifying year M.A. standing, Sociology 53.345* or permission of the Department.

Day division, First term: Seminar two hours a week.
J. Matras

Sociology 53.450*

Advanced Research Methodology

An advanced study of specific methodological or statistical problems in social research. Students are expected to participate in a seminar project in which the topic varies from year to year. Among the topics which may be included are: secondary data analysis, elite interviewing, participant and other modes of observation, construction of attitude scales and multivariate analysis.

Not offered 1980-81.

Sociology 53.451*

Substantive Demography

An application of demographic models to the study of the interrelations of demographic and other phenomena. Students are expected to apply demographic

techniques and conceptual frameworks to the investigation of a substantive problem.

Prerequisite: Sociology 53.351* or permission of the Department.

Not offered 1980-81.

Sociology 53.456*

Selected Problems in Urban Studies

An intensive examination of one or more problems in the general area of urban studies, such as the role of urban planners, grass-roots movements in urban communities ecological and other environmental phenomena associated with urban growth.

Prerequisite: Final-year Honours standing or permission of the Department.

Not offered 1980-81.

Sociology 53.461*

Selected Problems in the Study of Deviance

A critical examination of current theory and research on some specific type of deviance, such as crime, sexual deviance; the use of alcohol, non-medical drug usage, mental illness, political corruption, etc.

Not offered 1980-81.

Sociology-Anthropology 56.465*

Selected Problems in the Study of Ethnic and Race Relations

An intensive examination of certain aspects of ethnic and race relations and conflict as they relate to the concept of plural society, to the revival of ethnic and racial prejudice against recent immigrants to post-industrial societies and to the emergence of ethnic consciousness and nationalism. Topic for 1980-81: to be announced.

Prerequisite: Final-year Honours standing or permission of the Department.

Day division, First term: Seminar two hours a week.
G. Neuwirth

Anthropology 54.470*

Selected Problems in the Study of New World Indians and Eskimos

An in-depth examination of several Indian and Eskimo societies. Attention is given to both change and persistence in social and cultural patterns within the historical period, as well as to the contemporary conditions under which Indians and Eskimos live. Emphasis is placed on the native peoples of Canada and other areas of the Americas.

Prerequisite: Final-year Honours standing or permission of the Department.

Day division, Second term: Seminar two hours a week.

Anthropology 54.475*

Contemporary Problems in Anthropology

Selected problems in Anthropology, not ordinarily treated in the regular course program. The choice of topic varies from year to year.

Not offered 1980-81.

Anthropology 54.476***Contemporary Problems in Anthropology**

Selected problems in Anthropology, not ordinarily treated in the regular course program. The choice of topic varies from year to year. Topic for 1980-81: Anthropology and Native Rights. Native groups in Canada are currently attempting to re-define their relationships to the wider society. That process involves questions of ownership and control of land and resources, self-government, legal status, and cultural integrity. This course examines the origins of those questions in the context of acculturation, and how they are being resolved. Emphasis is placed on the role of anthropology in that process, particularly the kinds of inputs that can be made by cultural ecologists, ethno-historians, and development specialists. (Students interested in the legal aspects of this topic are also referred to Law 51.354*, Law and Native Peoples of Canada.)

Prerequisite: Fourth-year Honours standing, or permission of the Department.

Day division, Second term: Seminar two hours a week.
I. Prattis, J. Cove

Sociology-Anthropology 56.478***Anthropology of the Polar Basin**

A comparative study of the social and cultural anthropology of the native peoples indigenous to the Polar Basin. Emphases are placed on similarities and differences in social structure, cultural forms and modernization in Canada, Alaska, Greenland, U.S.S.R. and Northern Europe. Questions related to administrative policy concerning land rights, participation in modern resource development projects and the development of nativistic movements are also examined.

Prerequisite: Final-year Honours standing, or permission of the Department.

Not offered 1980-81.

Sociology 53.485***Contemporary Problems in Sociology**

Selected problems in Sociology, not ordinarily treated in the regular course program. The choice of problems varies from year to year. Topic for 1980-81: Topics in Cognitive Consistency. Beginning with the processes underlying cognitive consistency, gestalt theory, psychologic, implication and social comparison processes, the course moves to a general consideration of the principal consistency paradigms. These include, balance theory, cognitive dissonance, attribution theory, as well as the less general but more applied theories of just world and reactance. Two general concerns motivate this survey of theory and research: one, a humanistic concern with the social implications of the research; and two, to attempt to work from basic principles (gestalt, etc.) through the "mini-theories" toward a more general theory of consistency.

Prerequisite: Final-year standing in social sciences, and a course in social psychology or permission of the Department.

Day division, First term: Seminar two hours a week.
T. Nosanchuk

Sociology 53.486***Contemporary Problems in Sociology**

Selected problems in Sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

Not offered 1980-81.

Sociology 53.491* and 53.492***Anthropology 54.491* and 54.492*****Tutorial in Sociology or Anthropology**

See Explanatory note, p. 267.

Sociology 53.495, Anthropology 54.495**Honours Practicum**

At the end of their final year, Honours candidates are required to present a major research essay. For Honours students in Anthropology, and for those Honours students in Sociology who choose this option, this requirement is met through the Practicum. Students present their essay proposals for discussion and criticism to fellow students and faculty and report periodically upon the paper's progress. Common problems of conceptualization, research design, analysis and interpretation are taken up for consideration.

Prerequisite: Final-year Honours standing.

Sociology 53.498**Honours Essay**

At the end of their final year, Honours candidates are required to present a major research essay. For Honours students in Sociology the Honours Essay, carried out under a faculty supervisor, is one way of meeting this requirement. Early in the year and in consultation with the Co-ordinator of Honours (Sociology), the student selects or is assigned a supervisor. The student is orally examined upon the Essay after its submission.

Prerequisite: Final-year Honours standing.

Hours arranged.

Graduate Courses

Final-year Honours students are encouraged to take one or more graduate seminars which are available to them with the permission of the Department. A variety of theoretical, substantive and methodological courses are available. Specific details are contained in the 1980-81 Graduate Studies and Research calendar.

Courses Planned for Summer School Day and Evening Divisions

*Summer 1981 (tentative)**Day*

53.100, 56.200*, 53.210*, 56.220, 56.241, 53.270, 53.306.

Evening

53.100, 54.100, 53.210, 54.225, 53.245, 53.270, 53.315.

At least one of the introductory courses (Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100) will be given every Summer in both divisions.

Every Summer one of the required theory courses will be given, alternating between Day and Evening divisions. Other offerings will depend upon departmental capabilities and student interest and demand. A variety of types and levels of courses will be offered each year.

Fall-Winter Session Evening Division

The introductory courses (Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100) are offered every year in one or more sections. One of the required methods courses (Sociology-Anthropology 56.200* and either Sociology 53.201* or Anthropology 54.201*) and one of the required theory courses (Sociology-Anthropology 56.305, Sociology 53.306 and Anthropology 54.310) will be offered in every Evening session.

The specific courses will rotate year by year, so that each of the methods courses will have been offered in the Evening over a two-year period and each of the theory courses over a three-year period.

A number of other courses will be offered with some frequency as well, depending upon departmental capabilities and student interest and demand. In any given year an attempt will be made to ensure a variety of types and levels.

Institute of Soviet and East European Studies

For details of program offered by the Institute see pp. 108-110.

Courses Offered

Soviet Studies 55.400★

Aspects of Eastern Europe

An interdisciplinary seminar in aspects of the study of Eastern Europe with specific content dependent on the current emphasis and resources of the program of the Institute. Recommended for the Institute of Soviet and East European Studies Honours students.

Not offered 1980-81.

Soviet Studies 55.401★

Aspects of Eastern Europe

See description of Soviet Studies 55.400★.

Not offered 1980-81.

Soviet Studies 55.402★

Aspects of Eastern Europe

See description of Soviet Studies 55.400★.

Not offered 1980-81.

Soviet Studies 55.490★

Tutorial in Soviet and East European Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

Soviet Studies 55.491★

Tutorial in Soviet and East European Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

Soviet Studies 55.492★

Tutorial in Soviet and East European Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

Soviet Studies 55.498

Honours Essay

Prerequisite: Permission of the Institute.

Soviet Studies 55.500★

Interdisciplinary Seminar on the Soviet Union and Eastern Europe

Prerequisite: Permission of the Institute.

First term.

Soviet Studies 55.501★

Interdisciplinary Seminar on the Soviet Union and Eastern Europe

Prerequisite: Permission of the Institute.

Second term.

Department of Spanish

Officers of Instruction

Acting Chairman

J. Jurado

Assistant Chairmen

First term: F. Atienza

Second term: C.A. Marsden

Supervisor of Language Courses

M.A. Giella

Supervisor of Honours and Majors

A. Lozano

Supervisor of Graduate Studies

C.A. Marsden

Director of Winter Program in Spain

J.M. López-Saiz

Professors

R.L. Jackson

J. Jurado

Associate Professors

F. Atienza

F. Hernández

R. Larson

A. López-Fernández

C.A. Marsden

P.J. Roster, Jr.

Assistant Professors

J.M. López-Saiz

A. Lozano

Instructor

M.A. Giella

Acceleration and Intensive Spanish

Students who are beginning the study of Spanish at university, and who are considering Spanish as a Major, should take note of Spanish 38.120, Intensive Introductory Spanish (two credits), 38.151, Intensive Intermediate Spanish, designed specifically for potential Majors, and the Intensive Spanish Program, a year which includes a term abroad, devoted exclusively to the study of Spanish (see below).

Summer Session and Evening Offerings

The Department normally offers language courses (Spanish 38.115, 38.150, 38.201*, 38.202*, 38.301*, 38.302*) through the 300 level in both Day and Evening divisions during the year (38.115 Summer session). In addition, the Department offers Spanish 38.210* and 38.211* annually in the Evening division and has as well a system of rotation that ensures the offering of a different literature course at the 300, 400 and 500 levels each year in the Evening. The Department also offers a 400-level literature course every Summer.

Intensive Spanish Program and Winter Program in Spain

The Intensive Spanish Program is a year devoted exclusively to the study of Spanish. The program is divided into First term and Second term. Students may enrol in either of the two terms or in both.

First Term: Language Acquisition

The First term of the Intensive Spanish Program, offered at Carleton, is designed to provide a maximum of acceleration in language acquisition to well-motivated students with little or no previous training in Spanish. While intended for the beginning student, the program is flexible enough to accommodate students who already have a grade of at least C+ in Grade 13 Spanish or in Spanish 38.115 or the equivalent. Such students may audit the Introductory unit (Spanish 38.115) of the program but may receive only an additional one and a half credits upon successful completion of the First term.

The full First term covers the following courses:

Spanish

38.115 Introductory Spanish;

38.150 Intermediate Spanish;

38.201* Spanish Conversation.

Students may enrol in any course unit of this program for equivalent credit. Similarly, they may withdraw from the program, in exceptional cases, after each unit receiving equivalent credit after successful examination for work done.

This program entails fifteen hours of class per week plus language laboratory instruction and practice for a total of up to two and a half credits.

General Information

The Department offers both Major and Honours programs. Classes are generally conducted in Spanish, and laboratory instruction, an integral part of courses at the introductory and intermediate levels, is also available to students in the more advanced language courses.

The Department offers Introductory Portuguese when there is a sufficient number of interested students.

Lists of prescribed texts and supplementary reading for all courses are available from the Secretary of the Department.

Students are encouraged to take advantage of the favourable atmosphere for informal practice of the language provided by CASA, the Society for Students of Spanish.

During the First term students are charged with the responsibility of spending, together with the other members of the program, as much time as possible outside the classroom under the guidance of a "group leader" (a senior student in Spanish), who will encourage them to practise whatever material they are being exposed to in class, and who will organize drill sessions and other activities for the purpose of reinforcing what the students are learning during regular classroom hours. After successful completion of the First term, students have the option of joining the Second term of the Intensive Spanish program or enrolling in up to two and a half credits in the subjects of their choice.

Second Term: Language and Civilization

During the Second term the program is held in Spain, where students continue their studies by taking another two and a half compressed courses in Spanish.

Courses available abroad are:

Spanish

- 38.202* Spanish Composition
- 38.210* Spanish Civilization
- 38.211* Spanish American Civilization
- 38.301* Advanced Spanish Conversation
- 38.302* Advanced Spanish Composition

The program requires fifteen class hours a week plus regular field trips. Attendance is compulsory, subject to the usual exceptions.

The cost of the program, including university fees and room and board, is approximately the same as a similar period of full-time study spent at Carleton, plus air fare.

Admission Requirements

Admission to the Winter Program Abroad (Second term) is limited to students who have completed (a) the Intensive Spanish Program, First term; or (b) have a credit in an intermediate-level Spanish course and Spanish 38.201* or the equivalent.

Second- or Third-year Spanish Majors who wish to take only this second half of the program are advised to take Spanish 38.201*, 38.303* and three other half courses from those available in other disciplines during the First term. Non-Majors wishing to enrol in the program should not only consult the Department of Spanish concerning the program, but also their Major departments (chosen or intended) to arrange a Major program which will permit the necessary absence from Ottawa.

Interested students should apply to Professor J.M. López-Saiz, Director of the Program Abroad (Winter session, Second term), Spanish Department, preferably not later than October 15, 1980.

Details describing the Program Abroad and possible financial assistance are available from the Department and will be forwarded on request.

Majors Programs

Interested students must consult with the Department as early as possible to plan their program. General requirements are as laid down on pp. 91-92 of the Calendar. A Major in Spanish normally consists of five full-course credits after Spanish 38.150 or 38.151 or 38.120; Spanish 38.210* and 38.211* are compulsory, and three literature full-course credits at the 300 level must be taken. A Combined Major will consist of four full-course credits beyond the intermediate level, to include Spanish 38.210*, 38.211* and two literature full-course credits at the 300 level.

Minimum Requirements for Majors and Honours

The Department requires Majors and Honours students to have a minimum of C- in each required literature course at the 300 or 400 level or an average of C overall in these courses.

Honours Programs

Honours in Spanish

General regulations concerning Honours courses are to be found on pp. 91-93. The Honours program in Spanish is designed to give the student a thorough knowledge of Hispanic language and literature. Lectures and seminars cover the origins and evolution of the language, the principal periods of Spanish and Spanish American literature, and include some study of allied literatures in view of further work at the graduate level. The program consists of eight full-course credits beyond the intermediate level to include Spanish 38.210*, 38.211*, three literature full-course credits at the 300 level and at least two literature full-course credits at the 400 level. For an explanation of Honours standing see p. 93.

Combined Honours in Spanish and French

This program is recommended especially for students wishing to enter a Faculty of Education in one of the Ontario Universities after completion of the B.A. with a view to becoming a language teacher in a secondary school. Six full-course credits beyond the intermediate level are required in each language. Required courses in Spanish are 38.210*, 38.211*, two literature full-course credits at the 300 level and at least one literature full-course credit at the 400 level.

Other Combined Honours Programs

Students interested in pursuing an Honours program in which Spanish is combined with another subject are invited to discuss the matter with the Supervisor of Honours in the Department of Spanish. The minimum

requirements are six full-course credits beyond the intermediate level in Spanish, to include Spanish 38.210*, 38.211*, two literature full-course credits at the 300 level and at least one literature full-course credit at the 400 level.

Graduate Courses

Students in Fourth-year Honours may take a maximum of two courses at the 500 level with special permission of the Graduate Studies Committee of the Department of Spanish. These courses are listed separately in the Graduate Studies and Research Calendar.

Prerequisites

All students wishing to enrol in a course for which they do not have the prerequisite must obtain the permission of the Department.

Courses Offered

Note:

Students who have already taken any of the following courses may not enrol for additional credit in either of the new corresponding half courses: Spanish 38.210 (38.210*, 38.211*), 38.320 (38.320*, 38.321*), 38.330 (38.330*, 38.331*), 38.350 (38.350*, 38.351*), 38.415 (38.415*, 38.416*), 38.420 (38.420*), 38.430 (38.430*, 38.431*), 38.435 (38.435*, 38.436*), 38.440 (38.440*, 38.441*), 38.460 (38.460*, 38.461*), 38.470 (38.470*, 38.471*).

Spanish 38.115

Introductory Spanish

A course for those with no knowledge of Spanish, designed to give the student the fundamentals of spoken and written Spanish, through oral practice, reading and laboratory work.

Day and Evening divisions: Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program: First term.

Spanish 38.120

Intensive Introductory Spanish (two credits)

A course designed for students with little or no knowledge of Spanish. Using an intensive audiolingual approach to Spanish, students can attain in one year the level of proficiency and fluency normally gained in Spanish 38.115 and 38.150. Students not making satisfactory progress will be transferred to the regular introductory course (Spanish 38.115).

Prerequisite: Permission of the Department.

Day division: Lectures and laboratory six hours a week.

M.A. Giella, members of the Department

Spanish 38.150

Intermediate Spanish

A course for those with at least one year of Spanish. Grammar review, extensive reading, guided composition, laboratory work.

Prerequisite: Spanish 38.115 or equivalent.

Day and Evening divisions: Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program (First term).

Spanish 38.151

Intensive Intermediate Spanish

A course for potential Majors and for those with Grade 13 Spanish or equivalent. Review of grammar and some advanced syntax; extensive reading, discussion and composition. Laboratory work.

Prerequisites: Spanish 38.115 or equivalent, and permission of the Department. With special permission of the Department, students enrolled in this course may take simultaneously Spanish 38.201*.

Day division: Lectures and laboratory four hours a week.

F. Hernández

Spanish 38.201*

Spanish Conversation

Conversation and discussion of current problems, supplemented by occasional written work.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Day and Evening divisions, First term; Day division, Second term: Three hours a week.

Also offered in Intensive Spanish Program (First term).

Spanish 38.202*

Spanish Composition

A course designed to consolidate the linguistic knowledge attained in Spanish 38.150 and to inculcate the elements of a good Spanish style.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Day and Evening divisions, Second term: Three hours a week.

Also offered in Winter Program Abroad (Second term).

Spanish 38.210* (part 38.210)

Spanish Civilization

The cultural heritage of Spain in its social and geographical contexts.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Evening division, First term: Three hours a week.

Also offered in Winter Program Abroad (Second term).

F. Atienza

Spanish 38.211* (part 38.210)

Spanish American Civilization

The cultural heritage of Spanish America in its social and geographical contexts.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Evening division, Second term: Three hours a week.
Also offered in Winter Program Abroad (Second term).
M.A. Gliella

Spanish 38.235

An Introduction to Hispanic Theatre

A study of the theory and practice of dramatic production in Spain and Spanish America together with detailed analysis and interpretative reading of representative plays. Students in the course are required to participate in the staging of a play.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.
Not offered 1980-81.

Spanish 38.301*

Advanced Oral Spanish

An advanced sequel to Spanish 38.201*.

Prerequisite: Spanish 38.201* or permission of the Department.

Evening division, First term: Three hours a week.

Also offered in Winter Program Abroad (Second term).

Spanish 38.302*

Advanced Spanish Composition

An advanced sequel to Spanish 38.202*.

Prerequisite: Spanish 38.202* or permission of the Department.

Evening division, Second term: Three hours a week.

Also offered in Winter Program Abroad (Second term).

Spanish 38.303*

Spanish Phonetics and Phonology

A descriptive study of the sounds and sound patterns of Spanish. Practical exercises, written and oral. Recommended for teachers.

Prerequisite: Spanish 38.201* and 38.202* or permission of the Department.

Not offered 1980-81.

Spanish 38.305

Intensive Oral Spanish

An intensive course in Spanish conversation which, being offered only in a Spanish-speaking country, also provides an introduction to Hispanic culture. Students who satisfactorily complete this course are ineligible to enrol subsequently in Spanish 38.201* or 38.301*. Offered only in the Summer term. Compulsory attendance at all classes and participation in all activities.

Prerequisite: Spanish 38.150 or 38.151 or 38.120 or permission of the Department.

Spanish 38.320* (part 38.320)

The Golden Age I: Renaissance

A study of representative works of Spanish literature of the sixteenth century.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department.

Day division, First term: Three hours a week.

A. Lozano

Spanish 38.321* (part 38.320)

The Golden Age II: Baroque

A study of representative works of Spanish literature of the seventeenth century.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department.

Day division, Second term: Three hours a week.

A. Lozano

Spanish 38.330* (part 38.330)

Nineteenth-Century Spanish Literature

A study of representative works of Spanish literature of the nineteenth century through the Generation of 1898.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department.

Evening division, First term: Three hours a week.

F. Atienza

Spanish 38.331* (part 38.330)

Twentieth-Century Spanish Literature

A study of representative works of Spanish literature after the Generation of 1898.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department.

Evening division, Second term: Three hours a week.

F. Atienza

Spanish 38.350* (part 38.350)

Spanish American Literature, 1500-1888

A study of representative works of Spanish American literature of the Colonial Period and the nineteenth century prior to Modernism.

Prerequisite: Spanish 38.210 or 38.211* or 38.235 or permission of the Department.

Day division, First term: Three hours a week.

P.J. Roster

Spanish 38.351* (part 38.350)

Spanish American Literature from Modernism to the Present

A study of representative works of Spanish American literature since 1888.

Prerequisite: Spanish 38.210 or 38.211* or 38.235 or permission of the Department.

Day division, Second term: Three hours a week.

P.J. Roster

Spanish 38.415* (part 38.415)

Medieval Spanish Literature from the Origins through 1300

A study of major works of Spanish literature from the earliest times through the thirteenth century.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300 level before enrolling in this course.

Not offered 1980-81.

Spanish 38.416* (part 38.415)

Medieval Spanish Literature, 1300-1500

A study of major works of Spanish literature of the fourteenth and fifteenth centuries.

Prerequisite: Spanish 38.210 or 38.210* or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300 level before enrolling in this course.

Not offered 1980-81.

Spanish 38.420* (38.420)

Cervantes

A study of Cervantes and his age, with particular reference to *Don Quijote*.

Prerequisite: Spanish 38.320, or 38.320* and 38.321* or permission of the Department.

Day division, First term: Three hours a week.

C.A. Marsden

Spanish 38.430* (part 38.430)

Modern Spanish Novel

Analysis and interpretation of works by major Spanish novelists from the beginnings of Realism in the nineteenth century up to the Civil War in 1936.

Prerequisite: Spanish 38.330, or 38.330* and 38.331*, or permission of the Department.

Not offered 1980-81.

Spanish 38.431* (part 38.430)

Contemporary Spanish Novel

Analysis and interpretation of works by major Spanish novelists from the Civil War to the present.

Prerequisite: Spanish 38.330, or 38.330* and 38.331* or permission of the Department.

Not offered 1980-81.

Spanish 38.435* (part 38.435)

Modern Spanish Drama

Analysis and interpretation of works by major Spanish playwrights of the nineteenth and early twentieth centuries, together with study of related dramatic theory.

Prerequisite: Spanish 38.330, or 38.330* and 38.331* or permission of the Department.

Evening division, First term: Three hours a week.

A. López-Fernández

Spanish 38.436* (part 38.435)

Contemporary Spanish Drama

Analysis and interpretation of works by major Spanish playwrights from the Civil War to the present, together with study of related dramatic theory.

Prerequisite: Spanish 38.330, or 38.330* and 38.331* or permission of the Department.

Evening division, Second term: Three hours a week.

A. López-Fernández

Spanish 38.440* (part 38.440)

Modern Spanish Poetry

A study of Spanish poetry and poetics of the nineteenth and early twentieth centuries.

Prerequisite: Spanish 38.330, or 38.330* and 38.331* or permission of the Department.

Day division, First term: Three hours a week.

A. López-Fernández

Spanish 38.441* (part 38.440)

Contemporary Spanish Poetry

A study of Spanish poetry and poetics from the Generation of 1927 to the present.

Prerequisite: Spanish 38.330, or 38.330* and 38.331* or permission of the Department.

Day division, Second term: Three hours a week.

A. López-Fernández

Spanish 38.460* (part 38.460)

Twentieth-Century Spanish American Novel I

Analysis and interpretation of works by major Spanish American novelists of the first half of the twentieth century. The regionalistic novel of social realism, including novels of the Mexican Revolution, the pampa, the jungle, and the Andes.

Prerequisite: Spanish 38.350, or 38.350* and 38.351* or permission of the Department.

Not offered 1980-81.

Spanish 38.461* (part 38.460)

Twentieth-Century Spanish American Novel II

Analysis and interpretation of works by major Spanish American novelists of the first half of the twentieth century. Novels of universal theme, especially reflecting artistic, philosophical and psychological concerns.

Prerequisite: Spanish 38.350, or 38.350* and 38.351* or permission of the Department.

Not offered 1980-81.

Spanish 38.470* (part 38.470)

Twentieth-Century Spanish American Poetry I

A study of the principal tendencies in twentieth-century Spanish American poetry with special emphasis on the modernist poets, the post-modernist *poetisas* and the creationism of Huidobro.

Prerequisite: Spanish 38.350, or 38.350* and 38.351* or permission of the Department.

Not offered 1980-81.

Spanish 38.471* (part 38.470)

Twentieth Century Spanish American Poetry II

A study of the principal tendencies in twentieth century Spanish American poetry, with special emphasis on the social poetry of César Vallejo, Nicolás Guillén and Pablo Neruda.

Prerequisite: Spanish 38.350, or 38.350* and 38.351* or permission of the Department.

Not offered 1980-81.

Spanish 38.490

Seminar on a Special Topic

Designed for Honours students normally in their final year, or for Graduate students.

Not offered 1980-81.

Spanish 38.491*

Seminar on a Special Topic

Designed for Honours students normally in their final year, or for Graduate students.

Not offered 1980-81.

Spanish 38.492*

Special Studies

From time to time members of the Department form small groups to study certain problems or aspects of Spanish literature in greater depth than they are covered in other courses. Interested students should consult the Department.

Not offered 1980-81.

■ **Portuguese Courses**

Portuguese 38.116

Introductory Portuguese

A course designed to provide the student with the fundamentals of Portuguese grammar, a basic vocabulary and speaking knowledge of Portuguese. Students who have taken courses in other Romance languages should make considerable progress.

Not offered 1980-81.







Officers of the Faculty

Dean
M.C. de Malherbe

Associate Dean
To be announced

Assistant Dean and Faculty Registrar
E.W. Ryan

Assistant Faculty Registrar
S. Cotter

Departmental Chairmen

Civil Engineering
J. Adjeleian

Electronics
A.R. Boothroyd

Mechanical and Aeronautical Engineering
J.A. Goldak

Systems Engineering and Computing Science
J.S. Riordon.

Bachelor of Engineering Degree Program

The Bachelor of Engineering degree is awarded on successful completion of a four-year program of studies. In the first two and a half years the emphasis is on fundamental mathematical, physical and engineering sciences and on basic engineering. In the final year and a half of the B.Eng. program, curriculum options are offered allowing specialization in Civil, Electrical or Mechanical Engineering.

The engineering programs of study offered at Carleton University meet the academic requirements for professional engineering registration by the Association of Professional Engineers of the Province of Ontario; they also meet the academic requirements for professional registration in the provinces of Alberta, British Columbia, Manitoba, Newfoundland, New Brunswick, Nova Scotia, Prince Edward Island, Quebec, Saskatchewan and the Yukon.

Admission Requirements

Qualifying University Year

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of 10 Advanced or Enriched Phase credits at Levels 3 and 4, including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.

First Year

The Ontario Secondary School Honours Graduation Diploma with a minimum 60% average and including Functions, Calculus, Chemistry and Physics.

A student unable to meet the foregoing specific course requirements but otherwise admissible to Carleton University may be admitted, but will be required to satisfy the outstanding requirements at the Qualifying University year level.

Enrolment Limitation

Applicants should note that in view of limited human and physical resources, meeting the admission requirements can only establish eligibility for selection to the Faculty of Engineering.

Advanced Standing

Applications for admission with advanced standing to the program leading to the Bachelor of Engineering degree will be evaluated on an individual basis.

Advanced standing for academic subjects completed with a grade of C- or its equivalent at another university or college, or in another degree program at Carleton University, will be evaluated for equivalence to the program requirements of the Bachelor of Engineering.

The Faculty of Engineering does not normally accept, for transfer, courses which have been assessed as Science courses and which might be used towards the Fourth-year Engineering/Science elective requirements, since the final year of study must be completed in the Bachelor of Engineering program at Carleton University.

Mature Matriculation

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and are twenty-one years of age or over, by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program. See Admissions Section p. 33 for detailed information.

Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral. Applicants whose mother tongue is other than English must clearly exhibit this ability.

Qualifying University Year

Term	Lectures and		Laboratory and	
	I	II	Tutorials	Problem Analy
65.010 Introductory Chemistry	3	3	3	3
69.006* Functions and Relations	4	—	—	—
69.007* Introductory Calculus	—	4	—	—
75.010 Pre-University Physics	3	3	3	3
Elective* (full-course equivalent)	3	3	3	3
Elective* (full-course equivalent)	3	3	3	3
Hours per week	16	16	12	12

*The hours per week for electives will vary depending upon the electives chosen, which must be selected from courses approved for a Qualifying-University-year Science program (p. 356).

Accelerated Progress

Qualifying-University-year (Engineering) students who pass all required courses in Qualifying University year, including electives, with a B- or 70% average, may have their programs assessed for the purpose of reducing the number of courses required to graduate from the Bachelor of Engineering program. For example, approved Humanities/Social Sciences electives taken as Qualifying University year electives, which are at a first-year level or higher, may be used to fulfill program requirements in the Bachelor of Engineering. It is necessary for Qualifying-University-year students to meet the promotion requirements of the Qualifying University year, as well as the Accelerated Progress requirements, in order to be considered for Accelerated Progress.

First Year

Term	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	I	II	I	II	
65.111★ Chemistry for Engineering Students	3	—	3	—	5
75.100 Introductory Physics	3	3	3	3	10
69.107★ Elementary Calculus 1 (Note a)	5	—	—	—	5
69.117★ Elementary Algebra (Note a)	—	5	—	—	5
82.111★ Engineering Analysis	—	3	—	3	5
88.100 Engineering Graphics and Design	2	2	4	4	9
94.165 Introduction to Computers	3	3	1	1	8
Elective, Humanities or Social Sciences	3	3	—	—	7
Total Course Weight					54
Hours per week	19	19	11	11	

Elective Courses

Elective courses are described in the booklet, *A Guide to Choosing Electives in the Engineering Program*, available from the Faculty of Engineering Registrar's Office.

Humanities or Social Science Electives

See Note under Elective Courses, p. 300.

Note:

Students contemplating entering the Civil Engineering Program should be aware that Engineering 82.104★ (Surveying) is a required course in this department.

Second Year

Term	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	I	II	I	II	
69.201 Intermediate Calculus	4	4	—	—	9
82.220★ Mechanics of Materials I	—	3	—	3	6
88.211★ Dynamics	3	—	3	—	6
88.230★ Introductory Fluid Mechanics	3	—	3/2	—	5
88.240★ Introductory Thermodynamics	—	3	—	3	6
88.270★ Elements of Materials Engineering	3	—	3	—	6
94.261★ Electrical Energy Conversion	—	3	—	3	6
94.265★ Computer Methods in Engineering	—	2	—	3/2	4
97.251★ Circuits and Signals	3	—	3	—	6
Elective, Humanities or Social Sciences	3	3	—	—	7
Total Course Weight					61
Hours per week	19	18	10½	10½	

3/2 indicates 3 hours alternate weeks.

Elective Courses

Elective courses are described in the booklet, *A Guide to Choosing Electives in the Engineering Program*, available from the Engineering Faculty Registrar's Office.

Humanities or Social Sciences Electives

See Note under Elective Courses, p. 300.

Third Year

With the changes being made in this Calendar in the Third-year program for the 1980-81 academic year, a corresponding change will be made in the Fourth year program for the 1981-82 academic year. Some of the present Fourth-year courses may be changed or phased out. Students requiring further information should see their respective Department Chairmen.

Third Year**First Term, Common Core**

	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
69.375★ Mathematics	3	—	4
82.322★ Mechanics of Materials II	3	3	6
88.333★ Fluid Mechanics and Heat Transfer	3	3	6
97.357★ Electronics I	3	3	6
94.360★ Dynamics of Linear Systems	3	3	6
Elective, Humanities or Social Sciences	3	—	3.5
Total Course Weight			31.5
Hours per week	18	12	

Second Term, Civil Engineering Program

	Lectures	Laboratory and Problem Analysis	Course Weight
69.376★ or 69.352★ Mathematics	3	—	4
82.104★ Surveying			4 (Summer)
82.323★ Introductory Structural Analysis	3	3/2	5
82.324★ Introductory Structural Design	2	3/2	4
82.328★ Introductory Soil Mechanics and Eng. Geology	3	3/2	5
82.333★ Urban Planning	2	3/2	4
82.337★ Municipal Engineering	3	3/2	5
Elective, Humanities or Social Sciences	3	—	3.5
Total Course Weight			30.5 +4 (Summer)
Hours per week	19	7.5	

3/2 indicates 3 hours alternate weeks.

Note:

Students are encouraged to take Engineering 82.104★ (Surveying) in either the First or Second year of their Engineering program. Lectures and field work three weeks at the end of the Second term.

Second Term, Electrical Engineering Program

	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
69.376* or 69.352* Mathematics	3	—	4
94.303* Real Time Computing Systems	2	2	4
94.356* Automatic Control Systems I	3	3/2	5
94.367* Switching Circuits	3	3/2	5
97.354* Electromagnetic Theory	3	—	4
97.359* Electronics II	3	3	6
Elective, Humanities or Social Sciences	3	—	3.5
Total Course Weight			31.5
Hours per week	20	8	

3/2 indicates 3 hours alternate weeks.

Second Term, Mechanical Engineering Program

	Lectures and Tutorials	Laboratory and Problem Analysis	Course Weight
69.376* or 69.352* Mathematics	3	—	4
88.302* Machine Design and Practice	3	3	6
88.304* Dynamics of Machinery	3	—	4
88.340* Applied Thermodynamics	3	—	4
88.370* Principles of Manufacturing Engineering	3	—	4
88.390* Mechanical Engineering Laboratory I	—	6	5
Elective, Humanities or Social Sciences	3	—	3.5
Total Course Weight			30.5
Hours per week	18	9	

Elective Courses

Elective courses are described in the booklet *A Guide to Choosing Electives in the Engineering Program*, available from the Faculty of Engineering Registrar's Office.

Humanities or Social Sciences Electives

See Note under Elective Courses, p. 300.

Fourth Year (Civil Engineering Program)

Term	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	I	II	I	II	
82.497 Engineering Project	—	—	4	6	6
82.420* Structural Analysis I	3	—	3/2	—	5
82.423* Reinforced Concrete I	3	—	3/2	—	5
82.425* Design of Structural Steel Components	3	—	3/2	—	5
82.428* Geotechnical Engineering	3	—	3/2	—	5
82.480* Resources Planning	—	2	—	—	3
Elective*, Engineering (Note a)	—	2	—	3/2	4
Elective*, Engineering (Note a)	—	2	—	3/2	4
Elective*, Engineering (Note a)	—	2	—	3/2	4
Elective*, Engineering (Note a)	—	2	—	3/2	4
Elective*, Engineering or Scientific (Note a)	2	—	3/2	—	4
Elective*, Engineering or Scientific (Note a)	—	2	—	3/2	4
Elective, Humanities or Social Sciences	3	3	—	—	7
Total Course Weight					60
Hours per week	17	15	11½	13½	

3/2 indicates 3 hours alternate weeks.

Notes:

a) Students must elect at least two of Engineering 82.429* (Highway Engineering), 82.333* (Urban Planning), or 82.434* (Transportation).

b) This Fourth-year program is for students entering the Fourth year in the 1980-81 academic year only.

Civil Engineering

Civil Engineering is primarily concerned with the planning, design, construction, and maintenance of engineering works of all kinds, such as bridges, buildings, dams, airports, highways, railways, subways, harbours, water supply and sewage treatment systems. Civil engineers are employed in all levels of government, consulting offices, contracting firms, and the supply industries in positions of wide technical and administrative responsibility.

At Carleton University, students in their final year and a half in the Civil Engineering option will build upon the broad background in Engineering developed in the common program of the first two and a half years. The program of the Fourth year requires the students to study in the general areas of structural engineering, transportation, and soil mechanics. The students are also encouraged to make use of all available elective courses to obtain as broad a background in Civil Engineering as is possible.

Electives

- 82.333* Urban Planning
- 82.421* Structural Analysis II
- 82.422* Structural Design in Timber
- 82.424* Soil Mechanics

- 82.426* Design of Steel Structures
- 82.427* Reinforced Concrete II
- 82.429* Highway Engineering
- 82.430* Structural Planning in Architecture
- 82.431* Foundation Engineering
- 82.434* Transportation
- 82.435* Transportation Geography
- 82.437* Hydraulics of Municipal Waste Water Systems
- 82.440* Construction/Project Management
- 82.441* Hydrology
- 88.301* Measurement and Instrumentation in Engineering
- 88.371* Manufacturing Processes and Materials Engineering I
- 88.372* Engineering Materials
- 88.411* Strength Analysis
- 88.412* Failure Analysis and Non-Destruction Testing
- 88.414* Vibration Analysis
- 88.430* Control of Noise Pollution
- 88.443* Energy Conversion and Power Generation
- 88.447* Heating, Ventilating and Air Conditioning
- 88.472* Manufacturing Processes — Deformation
- 94.304* File Structures and Data Bases
- 94.366* Computer Applications
- 94.415* Engineering Management

Fourth Year (Electrical Engineering Program)

Term	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	I	II	I	II	
94.497 or 97.497 Engineering Project	—	—	4	6	6
94.451* Signal Processing	—	3	—	3/2	5
94.455* Automatic Control Systems I	3	—	3/2	—	5
97.453* Electric Transmission and Radiation	—	3	—	3/2	5
97.454* Electromagnetic Fields	3	—	—	—	4
97.458* Electronics II	3	—	4½	—	7
97.468* Solid State Electronics	3	—	3/2	—	5
Elective*, Engineering or Scientific (Note a)	2	—	3/2	—	4
Elective*, Engineering or Scientific (Note a)	—	2	—	3/2	4
Elective*, Engineering or Scientific (Note a)	—	2	—	3/2	4
Elective*, Engineering or Scientific (Note a)	—	2	—	3/2	4
Elective, Humanities or Social Sciences	3	3	—	—	7
Total Course Weight					60
Hours per week	17	15	13	13½	60

3/2 indicates 3 hours alternate weeks.

Notes

a) Students must take Engineering 94.466* (Switching Circuits) in either term of Fourth year if credit has not already been received for this course.

b) This Fourth-year program is for students entering the Fourth year in the 1980-81 academic year only.

Electrical Engineering

Electrical engineers are engaged in research, design, and development associated with a wide variety of electrical apparatus and systems. Examples include electronics, circuit design and fabrication, communications, power systems, and the design and application of computers. Opportunities exist for electrical engineers in industry, government, and education, as well as private consulting.

At Carleton University, the first two and a half years of the Engineering program provide a broad common background of technical fundamentals. The last year and a half of Electrical Engineering concentrates primarily on electronics, electromagnetics, control and communications. In addition, Electrical Engineering students may further enhance their specialized knowledge by choosing Engineering electives throughout the program in the areas of electronics, materials, systems, and computing.

Electives

- 88.301★ Measurement and Instrumentation in Engineering
 - 88.430★ Control of Noise Pollution
 - 88.443★ Energy Conversion and Power Generation
 - 88.472★ Manufacturing Processes — Deformation
 - 94.205★ Industrial Engineering I
 - 94.303★ Real-Time Computing Systems
 - 94.304★ File Structures and Data Bases
 - 94.310★ Systems Analysis
 - 94.362★ Electrical Power Circuits and Machines
 - 94.366★ Computer Applications
 - 94.405★ Discrete Simulation and its Applications
 - 94.415★ Engineering Management
 - 94.456★ Automatic Control Systems II
 - 94.457★ Introduction to the Architecture of Computer Systems
 - 94.461★ Programmable Logic Systems
 - 94.466★ Switching Circuits
 - 94.480★ Introduction to Software Engineering
 - 94.481★ Software Engineering Project
 - 97.459★ Radio and Microwave Link Engineering
 - 97.469★ Semiconductor Devices and Circuits
 - 97.475★ Electronic Properties of Materials
 - 97.478★ Integrated Circuits Electronics
- Computer Science courses see p. 55.

Fourth Year (Mechanical Engineering Program)

Term	Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
	I	II	I	II	
88.497 Engineering Project	—	—	4	6	6
88.402* Machine Design and Practice	3	—	3	—	6
88.403* Mechanical Systems Design	—	3	—	3	6
88.404* Dynamics of Machinery	2	—	3/2	—	4
88.440* Applied Thermodynamics	3	—	3/2	—	5
88.446* Heat Transfer	—	3	—	3/2	5
Elective*, Engineering	2	—	3/2	—	4
Elective*, Engineering	—	2	—	3/2	4
Elective*, Engineering	—	2	—	3/2	4
Elective*, Engineering or Scientific	2	—	3/2	—	4
Elective, Engineering or Scientific	—	2	—	3/2	4
Elective, Humanities or Social Sciences	3	3	—	—	7
Total Course Weight					59
Hours per week	15	15	13	15	

3/2 indicates 3 hours alternate weeks.

Note:

This Fourth-year program is for students entering the Fourth year in the 1980-81 academic year only.

Mechanical Engineering

Mechanical Engineering by its nature is a highly diversified discipline, encompassing a range of activities from manufacturing processes and design to energy conversion and conservation. The main topic areas of the discipline are solid mechanics and materials, fluid mechanics and thermo-sciences which together provide the breadth necessary for the graduate mechanical engineer.

At Carleton University, students in their final year and a half in the Mechanical Engineering option will build upon the broad background in Engineering developed in the common core program of the first two and a half years. In addition to the continued major emphasis on design, dynamics, thermodynamics and heat transfer the student can choose elective courses which span a wide range of applied subjects like noise control, energy conversion and power generation, manufacturing processes, vehicle technology, aerodynamics and flight mechanics, automatic controls, etc. which reflect the wide range of interests of faculty members of the Department of Mechanical and Aeronautical Engineering. In addition, the final-year student completes a major project on a topic of current interest in Mechanical and Aeronautical Engineering.

Electives

- 82.104★ Surveying
- 82.434★ Transportation
- 82.436★ Hydraulics Structures
- 82.437★ Hydraulics of Municipal Waste Water Systems
- 88.301★ Measurement and Instrumentation in Engineering
- 88.371★ Manufacturing Processes and Materials Engineering I
- 88.372★ Engineering Materials
- 88.406★ Introduction to Vehicle Engineering
- 88.411★ Strength Analysis
- 88.412★ Failure Analysis and Non-Destruction Testing
- 88.414★ Vibration Analysis
- 88.430★ Control of Noise Pollution
- 88.432★ Fluid Dynamics
- 88.435★ Fluid Machinery
- 88.437★ Mechanics of Flight
- 88.441★ Power Plant Analysis
- 88.443★ Energy Conversion and Power Generation
- 88.447★ Heating, Ventilating and Air Conditioning
- 88.452★ Mechanical Feedback Control Systems
- 88.472★ Manufacturing Processes — Deformation
- 94.362★ Electrical Power Circuits and Machines
- 94.366★ Computer Applications
- 94.415★ Engineering Management
- 94.456★ Automatic Control Systems II

General Information

The study of Engineering is necessarily structured. Upper-year courses are built on the material studied in the previous years and the approach taken is, of course, more advanced. The undergraduate program requirements are shown below, divided into four years. A full-time student normally takes six full courses or equivalent, and must take at least five courses each year unless given special permission by the Faculty of Engineering.

When students first register in the Faculty of Engineering they are assigned a faculty member who acts as the faculty adviser. The adviser usually counsels the student for the duration of the undergraduate program. This counselling includes program requirements, selection of electives, and course and program approvals. Students are advised to consult with their faculty advisers on a regular basis, but this does not preclude seeking advice and assistance from other faculty members.

Progress through the program is by means of a modified credit system, although for purposes of scheduling and for the foregoing reasons each student is cited as being in a particular year of the program. In order to move from one program year to the next a student must not be deficient in more than one course from the following lists,

First Year Prerequisites

Mathematics 69.006* and 69.007*;
Chemistry 65.010;
Physics 75.010.

Second Year Prerequisites

Those of the First year plus:
Chemistry 65.111*;
Mathematics 69.107* and 69.117*;
Physics 75.100;
Engineering 82.111*.

Third Year Prerequisites

Those of the First and Second years plus:
Mathematics 69.201;
Engineering 97.251*, 88.211* and 82.220*.

Fourth Year Prerequisites (Civil Engineering Option)

Those of the First, Second and Third years plus:
Engineering 82.322*;
Third-year Mathematics options.

Fourth Year Prerequisites (Electrical Engineering Option)

Those of the First, Second and Third years plus:
Engineering 94.360* and 97.357*;
Third-year Mathematics options.

Fourth Year Prerequisites (Mechanical Engineering Option)

Those of First, Second and Third years plus:
Engineering 88.240* and 82.322*;
Third-year Mathematics options.

The foregoing year requirements do not relate to a student's academic status, but only to the nominal year designation. However, students taking courses in years above that of their year designation have the responsibility for satisfactorily resolving any prerequisite deficiencies and difficulties in their course program.

Any student who does not have the prerequisites for a course may be withdrawn from the course by the department.

Elective Courses

The program requirements of years One through Four are tabulated on pp. 291-299. Each year of the program requires that the student include in the program courses from one or more of the following classifications of electives:

1. Engineering Electives: All undergraduate courses bearing the departmental numbers of the Faculty of Engineering (i.e. 82, 88, 94, 97) are approved Engineering electives. Graduate courses bearing those numbers may be taken as electives with the approval of both the Chairman of the Department offering the course and the student's Faculty adviser.

2. Scientific Electives: Courses in this classification include the physical sciences, mathematical sciences, computer sciences and related courses. Approved scientific electives are listed in the booklet, *A Guide to Choosing Electives in the Engineering Program*.

3. Humanities or Social Sciences Electives: Courses in this classification must be chosen from among those listed as approved in the booklet *A Guide to Choosing Electives in the Engineering Program*. Four Humanities or Social Sciences electives are shown in the lists of courses that constitute the full program. A student may, however, substitute an approved Scientific elective for one of the four Humanities or Social Sciences electives. This substitution may be made in any year, but only once in the program. One of the Humanities/Social Sciences electives must be Economics 43.100.

Course Level

The level of the number of a course corresponds to the year level; for example, the course Engineering 88.301* is at the Third-year level. This indicates the general academic background required and specific prerequisites are also given where appropriate. However, students may take courses at a year level higher than their current registration but they are advised to consult the course instructor if they have doubts regarding their background preparation. In some cases the Department may also be able to waive specific prerequisites.

Qualifying University Year Courses

Qualifying University year courses cannot be used to satisfy any of the elective requirements in the First through Fourth years, with the exception of Qualifying University year courses approved by Engineering Faculty Board. Such exceptions are listed in the *Guide to Choosing Electives in the Engineering Program*.

Timetables

All undergraduate courses in the Faculty of Engineering are offered in the Day division only, unless otherwise indicated.

Student Responsibility

The student is responsible for knowing the regulations of the Faculty of Engineering and for complying with them. Any exceptions to the regulations must be approved, in writing, by the Faculty of Engineering Committee on Admission and Studies. Routine approval of a records form (for example, a registration contract or a course change form) does not constitute approval of an exception.

Grading System

Standing in courses will be determined by the Faculty and will be shown by alphabetical grades. The grades used with their corresponding grade points are as follows:

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

Passed Supplemental Examination: D-

Notations to represent special circumstances are as follows:

Aeg
Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Engineering Faculty Committee on Admission and Studies only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

Pass

Pass standing in a supplemental examination; equivalent to 1 grade point.

F

Failure; no academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing; no academic credit.

Abs

Absent from formally scheduled final, special final, supplemental and special supplemental examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Engineering Faculty Committee on Admission and Studies for deferred examination privileges. Such applications must:

1. Be made in writing to the Engineering Faculty Registrar's Office not later than *one week* after the date of the examination; and
2. Be fully supported in the case of illness by a medical certificate or appropriate documents in other cases.

Academic Standing

The academic standing of each student will be reviewed just prior to fall registration. At that time the student's previous record, including courses from the preceding Summer session and supplemental examination results, will be considered. A student, who, upon review, no longer meets the requirements for satisfactory academic standing, will be placed on academic probation. A student may be on academic probation only once in the Bachelor of Engineering program.

Any student on probation will be required to repeat any required courses and repeat or replace any elective courses, from the previous year's registration, which are below a C- level.

To achieve satisfactory academic standing the student must:

1. Meet the grade-point average required for the year of study just completed.
2. Meet the cumulative grade-point average required for all courses taken as part of the Bachelor of Engineering program.

The required cumulative grade-point average and the grade-point average for the year are:

- 2.5 after one year of study;
- 2.8 after two years of study;
- 3.1 after three years of study;
- 3.4 after four years of study.

A year of study, as used here, refers to the student's period of study and not to the program year defined in the previous section of these regulations. Calculation of the weighted average is based on all the courses in which the student was registered during the year being completed, plus the courses of previous years. The most recent grade obtained in each course will be used to compute the grade-point average.

3. Not receive a grade of *F*, *FNS* or *Abs* in the year of study just completed in more courses than the allowable numbers listed below.

Number of Full Course Equivalents Taken	Maximum Number of Full Course Equivalent <i>F</i> , <i>FNS</i> or <i>Abs</i> Allowed
0.5 — 1.0	0
1.5 — 2.5	0.5
3.0 — 4.0	1.0
4.5 — 5.5	1.5
6.0 or more	2.0

A Qualifying University year student is assessed on the same basis as students in First through Fourth years as described above, with the following exceptions:

- (a) grade points are calculated as a simple average without weighting of courses;
- (b) the student must obtain a grade-point average of 2.5;
- (c) the student must not receive a grade of *F*, *FNS* or *Abs* in more than the equivalent of one full course.

Note:

The Qualifying University year is not considered to be part of the Bachelor of Engineering program for the purpose of assessment of academic standing. Students who fail to meet these conditions, will lose their undergraduate status and be ineligible for future registration in the Faculty of Engineering.

Students admitted with advance standing must obtain an average appropriate to their level of admission, but only those courses taken at Carleton University will be included in the evaluation.

Graduation

In order to fulfill the minimum graduation requirements for the degree of Bachelor of Engineering, a candidate must:

1. Have passed all the courses of the First to Fourth years, inclusive.
2. Have an overall weighted grade-point average of at least 3.4.
3. Have a weighted grade-point average of 3.4 in the final year of study.
4. Have a weighted grade-point average of 3.4 on the requirements of the Fourth Year program.
5. Be recommended for graduation by the Faculty of Engineering.

Degrees with Distinction

Upon recommendation of the Faculty of Engineering, the notation "with High Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To receive this recommendation the candidate is expected to obtain a weighted grade-point average of at least 9.0 in the course requirements of the final year and, in addition, a weighted grade-point average of at least 7.8 in the course requirements of the First to Fourth years, inclusive.

Upon recommendation of the Faculty of Engineering, the notation "with Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To receive this recommendation the candidate is expected to obtain a weighted grade-point average of at least 7.8 in the course requirements of the final year and, in addition, a weighted grade-point average of at least 6.6 in the course requirements of the First to Fourth years, inclusive.

Academic and Professional Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Engineering.

The American Society of Mechanical Engineers — Student Section sponsors field trips, films and speakers on industrial and other aspects of mechanical engineering. Faculty Adviser: Dr. D.A.J. Millar.

The Canadian Aeronautics and Space Institute meets monthly to provide a forum for discussion and dissemination of information on topics relating to aeronautics and space activities. Faculty Adviser: Dr. R.J. Kind.

The Canadian Society for Civil Engineering promotes technical activities related to all areas of civil engineering, such as building design and construction, geotechnical engineering and transportation. The activities of this group are designed to enhance and broaden the student's appreciation of the profession. To this effect, speakers are brought to the Department of Civil Engineering to give seminars on current topics and visits are organized to construction sites and other facilities where civil engineering has played an important role. Faculty Adviser: Dr. J.J. Salinas.

The Carleton Student Engineering Society (C.S.E.S.) is open to all members of the University who are enrolled in Engineering courses. Through its academic and social activities, C.S.E.S. acts as a liaison between the students and the governing bodies of the University and promotes professional interest, high standards and a spirit of mutual assistance in the study of Engineering.

The High School Computer Club is open to nominated High School students who wish to broaden their knowledge of computers through seminars, workshops and hands-on experience, using Carleton's timeshare services. The club meets bimonthly, with weekly computer access. Sponsors: Dr. J.E. Neilson and Mr. D. Sutherland.

The Student Branch of the *Institute of Electrical and Electronics Engineers* (I.E.E.E.) organizes a series of events of both professional and general interest. Among these activities are an annual "Computer Faire", an employment workshop for upper year students, an annual "papers" night and student-faculty get togethers. Faculty Adviser: Professor I. Reichstein.

Department of Civil Engineering

Officers of Instruction

Chairman

J. Adjeleian

Professors

J. Adjeleian

W.H. Bowes

G.T. Suter

Associate Professors

G.E. Bauer

J.P. Braaksma

J.L. Humar

A.M. Khan

A.P.S. Selvadurai

Assistant Professors

G.A. Hartley

D.R. MacLeod

J.J. Salinas

Adjunct Professors

D.R. Axelrad

Z.J. Haritos

W.E. Wright

H.R. Wynne-Edwards

Sessional Lecturers

W. Dawson

G. McRostie

D.R. Townsend

Courses Offered

Engineering 82.104*

Surveying

Surveying principles and practice; measurements of distance, difference in elevation, angles and directions; theory, use and adjustments of principal surveying instruments; theory of errors and weighted measurements; engineering surveys, profile, cross sections, earth-work, horizontal and vertical curves; use of rectangular coordinates in surveying; area computation by surveying methods; Handling of equipment, note-keeping, and surveying procedures are stressed in the field work.

Text: Brinker, *Elementary Surveying*.

Lectures and field work three weeks at the end of the Second term.

G. Bauer, J.J. Salinas

Engineering 82.111*

Engineering Analysis

Three dimensional statics with vectors. Definition of force and moment. Resultant of a system of forces. Force components. Equilibrium. Applications to trusses, frames and machines. Shear and bending

moment diagrams for beams. Introduction to material behaviour. Stress-strain relationships, yield stress, ultimate stress, Young's modulus, Hooke's law.

Text: Beer and Johnston, *Vector Mechanics for Engineers, Third Edition*.

Second term: Lectures three hours a week, tutorials and problem analysis, three hours a week.

J.J. Salinas

Engineering 82.220*

Mechanics of Materials I

Pin-jointed trusses: Forces and stresses in members, safety factor, introduction to design, bolted and riveted connections. Bending and shearing stresses in beams by approximate methods. Stresses in thin-walled cylinders due to internal pressure and torsion. Mohr's circle for stress. Stress-strain relations. Bending stresses in beams. Circular members in torsion. Stress-strain relations in shear. Shearing stresses in beams. Mohr's circle for strain. Introduction to electric resistance strain gauges, principal stresses from strain rosette data. Ultimate loads in bending and torsion. Thermal stresses. Buckling of columns.

Prerequisite: Engineering 82.111*.

Text: Bowes, Russell and Suter, *Mechanics of Engineering Materials*.

One term: Lectures three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

W.H. Bowes, G.A. Hartley

Engineering 82.322*

Mechanics of Materials II

Torsion bars and helical springs, stresses due to torque on non-circular sections, membrane analogy, shear flow, elastic-plastic torsion. Bending and shear stresses in beams of non-symmetrical cross-sections. Properties of areas; principal axes, Mohr's circle of inertia, shear centre. Columns having partial end-constraint, eccentrically loaded columns, beam-columns. Energy methods, minimum potential energy, Castigliano's theorems. Pressure vessels: thin-walled cylinders, membrane shell theory, flat plates. Fatigue: S-N curve, strength reduction factors, loads of varying amplitude. Failure theories.

Prerequisite: Engineering 82.220*.

Texts: Bowes, Russell and Suter, *Mechanics of Engineering Materials*.

First term: Lectures three hours a week, problem analysis and laboratory three hours a week.

W.H. Bowes, G.T. Suter

Engineering 82.323*

Introductory Structural Analysis

Review of plane statics; analysis of statically determinate structures; strain energy, principle of virtual work; influence lines, structural deflections and deformations; degree of indeterminacy and stability of

structural systems; analysis of hyperstatic structures; elastic and inelastic instability of structural elements.

Prerequisite: Engineering 82.322*.

Precludes additional credit for Engineering 82.420*.

Second term: Lectures three hours a week, problem analysis three hours alternate weeks.

G.A. Hartley

Engineering 82.324*

Introductory Structural Design

An introductory course in structural design intended to acquaint the student with the behaviour of typical engineering materials. Introduction to the National Building Code to determine the various loading conditions, factor of safety, and the requirements for the design of beams, columns and connections in steel, concrete and timber.

Prerequisite: Engineering 82.322*.

Second term: Lectures two hours a week, laboratory and problem analysis two hours a week.

J. Adjoleian

Engineering 82.328*

Introductory Soil Mechanics and Engineering Geology

Origin and classification of soils and rocks. Character of natural soil deposits. Soil water. Seepage and permeability of soils. Principle of effective stress. Stress-deformation and strength characteristics of soils and rocks. Consolidation characteristics of soils. Stress distribution in earth masses. Laboratory testing.

Prerequisite: Third-year registration.

Second term: Lectures three hours a week, laboratory three hours alternate weeks.

A.P.S. Selvadurai

Engineering 82.333*

Urban Planning

A systematic approach to urban planning. Basic planning studies, elements of the development plan. Land use plan formulation, zoning and land subdivision. Quantitative methods and special approaches. Interaction of land use and transport. (Also listed as Geography 45.433*.)

Prerequisite: Third-year registration.

References: Recent publications.

First term: Lectures two hours a week, problem analysis three hours alternate weeks.

J.P. Braaksma

Engineering 82.337*

Municipal Engineering

Introduction to the fundamental principles of municipal water supply and wastewater disposal; planning and design of water distribution systems and wastewater collection systems; chemical, physical and biological aspects of water and wastewater.

Prerequisite: Third-year registration.

Second term: Lectures three hours a week, laboratory three hours alternate weeks.

J.P. Braaksma

Engineering 82.420*

Structural Analysis I

Review of plane statics; analysis of statically determinate structures; influence lines; strain energy; structural deflections and deformations; introduction to flexibility analysis of structures; elastic and inelastic stability of structural elements; analysis of reinforced concrete building structures.

Prerequisite: Engineering 82.322*.

Text: Beaufait, *Basic Concepts of Structural Analysis*.

First term: Lectures three hours a week, problem analysis three hours alternate weeks.

G.A. Hartley

Engineering 82.421*

Structural Analysis II

Theorems relating to elastic structures; deflections of structures by the unit load method; influence lines; matrix formulation of structural problems; analysis by the matrix force method; analysis by the matrix displacement method; computer analysis of structures; introduction to finite elements.

Prerequisite: Engineering 82.420*.

Text: Beaufait, *Basic Concepts of Structural Analysis*.

Second term: Lectures and tutorials two hours a week, problem analysis three hours alternate weeks.

G.A. Hartley

Engineering 82.422*

Structural Design in Timber

Introduction to structural design in timber. Properties and anatomy of wood. Description of wood products. Factors affecting the strength and structural behaviour of wood structures. Strength evaluation and testing. Allowable stresses. Design in bending, compression and combined stresses. Design of trusses, frames, glulam structures, plywood components. Design of structural systems, formwork, foundations. Connections and connectors. Care, inspection, maintenance and repair of timber structures.

Prerequisite: Fourth-year registration or permission of the Department.

Second term: Lectures three hours a week, laboratory/problem analysis three hours alternate weeks.

J.J. Salinas

Engineering 82.423*

Reinforced Concrete I

Properties of concrete, mix design and use of admixtures, curing requirements, shrinkage, creep and temperature effects, ultimate strength and working stress, analysis and design of rectangular beams with tension and compression reinforcement, T beams, diagonal tension, shear design of web reinforcement, bond, one-way and two-way slabs, concentrically and eccentrically loaded columns, footings, introduction to prestressed concrete.

Prerequisite: Engineering 82.322*.

Texts: Winter, Urquhart, O'Rourke and Nilson, *Design of Concrete Structures*; CSA A23.3.

First term: Lectures three hours a week, problem analysis three hours alternate weeks.

G.T. Suter

Engineering 82.424*

Soil Mechanics

Geotechnical subsurface investigations, measurement of in-situ properties, plastic equilibrium. Slope stability. Earth dams, analysis of porewater pressures, and settlements. Secondary consolidation. Creep effects. (Also listed as Geography 45.424* and Geology 67.417*.)

Prerequisite: Engineering 82.428*.

Text: Terzaghi and Peck, *Soil Mechanics and Foundation Engineering*.

Reference: Taylor, *Fundamentals of Soil Mechanics*.
Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

A.P.S. Selvadurai

Engineering 82.425*

Design of Structural Steel Components

Determination of loads, factor of safety, properties of structural steels, fabrication and erection of structural steel, the design of axially loaded tension and compression members, design of column base plates, design of beams in flexure, design of simple and moment-resisting welded and bolted connections, design of members subject to combined compression and flexure, design of determinate trusses and plate girders.

Prerequisite: Engineering 82.322*.

Texts: Adams, Krentz and Kulak, *Canadian Structural Steel Design*; *National Building Code of Canada*; C.I.S.C. *Limit States Design Steel Manual*.

First term: Lectures and tutorials three hours a week, problem analysis three hours alternate weeks.

J.L. Humar

Engineering 82.426*

Design of Steel Structures

Steel building design: the design process, structural loads, gravity load design of floor systems, beams, girders, two cycle moment distribution; column gravity loads and moments and design; lateral loads, methods of lateral load resistance, design considerations; bracing system analysis for loads and drift; approximate frame analysis for loads and drift; $P-\Delta$ effect; estimating steel costs; introduction to plastic design.

Prerequisites: Engineering 82.425* and Fourth-year registration.

References: *National Building Code of Canada (1977)*, *CISC Limit States Design Steel Manual*.

Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

J. Humar

Engineering 82.427*

Reinforced Concrete II

Prestressed concrete: concept, materials, prestressing systems, stress analysis, design load stages, prestressing losses; member design, cable profiles, ultimate strength, shear and diagonal tension, bond, end block considerations. Concrete bridges: bridge types, design loads, distribution of loads to members and slabs, design procedures for single span slab. T-beam, AASHTO girder, and rigid frame bridges, diaphragms, bearing design. Composite bridge design: general considerations, shear connectors, design considerations. Building components: shear walls, slabs on grade, building frame design.

Prerequisites: Engineering 82.423* and Fourth-year registration.

Text: Nilson, *Design of Prestressed Concrete*.

Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

G.T. Suter

Engineering 82.428*

Geotechnical Engineering

Introductory soil mechanics, soil classification, seepage and flow through porous media, consolidation, settlement, elastic equilibrium shear strength. Elements of geotechnical design. Laboratory testing.

Texts: Sowers and Sowers, *Introductory Soil Mechanics and Foundations*; Bowles, *Engineering Properties of Soils and their Measurement*.

References: Terzaghi and Peck, *Soil Mechanics in Engineering Practice*; Lambe and Whitman, *Soil Mechanics*.

First term: Lectures three hours a week, laboratory three hours alternate weeks.

A.P.S. Selvadurai

Engineering 82.429*

Highway Engineering

Highway planning, economics and finance; highway location and geometric design; traffic engineering; highway drainage and subgrade structure; structural analysis and design of rigid and flexible pavements; mineral aggregates; bituminous mix design; principles of frost action and applications to highway design.

Prerequisite: Third-year registration.

Text: Oglesby and Hewes, *Highway Engineering*.

References: Ritter and Paquette, *Highway Engineering*; Woods, *Highway Engineering Handbook*; Yoder, *Principles of Pavement Design*.

Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

D.R. MacLeod

Engineering 82.430*

Structural Planning in Architecture

The nature of structural planning problems; general criteria in structural planning; functional, technical, economic and form considerations; loads, classification and estimation; building codes, fire resistance requirements; structural systems; various classifications;

comparative study; integration of structural systems with other building systems; synthesis, preliminary analysis and evaluation of alternative structural schemes; case studies. (Also listed as Architecture 77.424*.)

Not offered 1980-81.

Engineering 82.431*

Foundation Engineering

A critical study of the theories in soil mechanics and their application to the solution of geotechnical engineering problems. Field investigations, laboratory and field testing, special footings, mat foundations, caissons, pile foundations and excavations. Discussion of new methods and current research.

Prerequisite: Engineering 82.428*.

Text: Bowles, *Foundation Analysis and Design, Second Edition*.

Second term: Lectures two hours a week, laboratory three hours alternate weeks.

G.E. Bauer

Engineering 82.434*

Transportation

Introduction to the transportation planning process. The transportation system/environmental ensemble. Structuring transportation problems in a systems analysis framework. Problem recognition, problem definition, solution generation, solution analysis and evaluation. Planning urban transportation systems. Trip generation, trip distribution, modal split, and traffic assignment. Planning for other transport modes; air, rail, water, and pedestrian flows. Development of alternative transportation system proposals. Introduction to transport project and system economic evaluation. Environmental impact studies. (Also listed as Geography 45.434*.)

Prerequisite: Third-year registration.

Text: Morlok, *Introduction to Transportation Engineering and Planning*, 1978.

Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

A.M. Khan

Engineering 82.435*

Transportation Geography

Offered in the Department of Geography, as Geography 45.442*.

Engineering 82.437*

Hydraulics of Municipal Waste Water Systems

Hydraulics of sewers flowing partially full, flow in sewer junctions and transitions; estimates of amounts of sanitary and storm sewage; design of sewage collection systems; pumps, control, and measuring devices. Hydraulics of treatment processes, disposal problems.

Prerequisite: Engineering 88.332* and Fourth-year registration.

Second term: Lectures three hours a week.

D.R. Townsend

Engineering 82.440*

Construction/Project Management

Systems approach to project planning and control. Material includes critical path methods Precedence and PERT; consideration for allocating constraint resources, and a variation of schedules to optimize costs; Physical, economic and financial feasibility. Planning procedure, computer techniques and estimating. Case studies.

First term: Lectures two hours a week, problem analysis three hours alternate weeks.

D.R. MacLeod

Engineering 82.441*

Hydrology

Hydrologic cycle, stream flow, hydrology of snow, sub-surface water, hydraulics of wells, unit hydrograph and S-curve analysis of flood flows, infiltration, river and reservoir routing, introduction to statistical inference and time series analysis of hydrologic data. (Also listed as Geology 67.419*.)

Text: DeWeist, *Geohydrology*.

References: Chow, *Handbook of Applied Hydrology*; Linsley, Kohler and Paulhus, *Hydrology for Engineers*; Wisler and Brater, *Hydrology*.

Lectures and tutorials two hours a week, laboratory three hours alternate weeks.

G.E. Bauer

Engineering 82.480*

Resources Planning

Introduction to the nature, characteristics, problems and theories related to the use of resources. Systematic approach to resources planning and management. Concepts and methods of analysis, evaluation, programming and resources allocation.

Text: de Neufville and Stafford, *Systems Analysis for Engineers and Managers*, 1971.

Second term: Lectures two hours a week.

A.M. Khan

Engineering 82.497

Engineering Project

As a part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Civil Engineering on or before the last day of classes in September.

Students enrolled in the Fourth-year Civil Engineering option may elect to satisfy the project requirements by successfully completing two workshop courses from Division B in the School of Architecture with the approval of the Chairman of the Department of Civil Engineering.

Department of Electronics

Officers of Instruction

Chairman

A.R. Boothroyd

Professors

A.R. Boothroyd

M.A. Copeland

R.E. Thomas

Associate Professors

W. Chudobiak

J.P. Knight

P.D. van der Puije

Assistant Professors

C.H. Chan

B.A. Syrett

J.S. Wight

Adjunct Professors

V. Makios

S. Stuchly

Sessional Lecturer

S. Entwistle

Courses Offered

Engineering 97.251*

Circuits and Signals

Nature and properties of signals. Circuit elements: definitions and basic properties. Voltage and current sources. Kirchoff's laws, linearity, and superposition. Thevenin and Norton Theorems: circuit simplification techniques; resistance circuits, AC signals; phasors. AC steady state analysis: impedance, admittance and transfer properties; frequency response; detailed treatment of first order (RL and RC) circuits. Thevenin and Norton Theorems: AC steady state analysis; circuit reductions. Transient response: first order circuits, form of response; initial and final condition; relation to AC steady state properties. Properties of LCR circuits: AC steady state response; resonance.

Prerequisites: Physics 75.100 or 75.233* and concurrent registration in Mathematics 69.201.

Text: Williams, *Introduction to Electrical Circuit Theory*.

First term: Lectures three hours a week, laboratory and problem analysis three hours a week.

C.H. Chan, J.P. Knight

Engineering 97.354*

Electromagnetic Theory

Vector analysis: gradient, divergence, curl and Laplacian. Divergence theorem, Stokes theorem, Maxwell's equations. Electrostatic fields, Coulomb's law, Gauss' law, Poisson and Laplace equations. Image

and iteration techniques. Boundary value problems. Force and energy. Magnetostatic fields, Ampere's law, Biot-Savart law. Time varying fields, skin effect. Reflection and refraction of plane waves.

Prerequisites: Mathematics 69.305* or 69.375*, Engineering 94.261*.

Precludes additional credit for Engineering 97.454*.

Text: Rao, *Basic Electromagnetics and Applications*.
Second term: Lectures and tutorials three hours a week.

Engineering 97.357*

Electronics I

A course which treats the introductory aspects of electronics. Topics covered are: semi-conductor diodes; theory and applications. Bipolar transistors; theory, biasing circuits, linear amplifier design. Operational amplifier applications. Application of digital circuits; combinatorial and elementary sequential digital circuits.

Prerequisites: Engineering 97.251*; Mathematics 69.201 (may be taken concurrently).

Text: Oldham and Schwartz, *An Introduction to Electronics*.

First term: Lectures three hours a week, laboratory and problem analysis three hours a week.

W.J. Chudobiak, J.P. Knight

Engineering 97.359*

Electronics II

This course builds upon the material of Engineering 97.357*, Electronics I, with increasing emphasis on design as the course progresses. The laboratory is design oriented and includes project activities. Topics: Bipolar and field-effect transistors; characteristics, biasing, temperature effects and compensation. Linear amplifiers, single and cascaded stages; differential stage; frequency response and band width considerations. Power amplifier stages and frequency multipliers. Linear integrated circuits. Feedback and oscillation; oscillator design. Bipolar and MOS transistor switches; logic gates; flip-flops and trigger circuits. Timing and waveform processing circuits; multivibrators. Memory circuits, registers and counters. Prerequisites: Engineering 97.357*, Engineering 94.360*.

Precludes additional credit for Engineering 97.458*.

Second term: Lecture and tutorials three hours a week, laboratory and problem analysis three hours a week.

Engineering 97.453*

Electromagnetic Transmission and Radiation

Introduction to transmission lines; transmission lines as distributed circuit elements, travelling waves and standing waves, reflection coefficient, standing wave ratio, impedance transformation, Smith Charts, stub matching, quarter wave transformers, half wave filters, transients. Introduction to guided waves; coaxial transmission lines, rectangular waveguide, waveguide resonators, optical fibers. Introduction to antennas;

infinitesimal linear element, half wave dipole, field equations, near and far fields, radiation resistance, gain, directivity, effective area. Introduction to linear arrays; array polynomial, broadside array, end fire array. Laboratory on microwave measurements and techniques.

Prerequisite: Engineering 97.454*.

Text: Kraus and Carver, *Electromagnetics*.

Second term: Lectures three hours a week, laboratory three hours alternate weeks.

J.S. Wight

Electronics 97.454*

Electromagnetic Theory

Vector analysis: gradient, divergence, curl and Laplacian. Divergence theorem, Stokes theorem, Maxwell's equations. Electrostatic fields, Coulomb's law, Gauss' law, Poisson and Laplace equations. Image and iteration techniques. Boundary value problems. Force and energy. Magnetostatic fields, Ampere's law, Biot-Savart law. Time varying fields, skin effect. Reflection and refraction of plane waves.

Prerequisites: Mathematics 69.375*, Engineering 94.261*.

Precludes additional credit for Engineering 97.354*.

Text: Rao, *Basic Electromagnetics and Applications*.

Second term: Lectures and tutorials three hours a week.

Engineering 97.458*

Electronics III

The transistor is described in terms of its major characteristics when employed as a linear active device in signal amplification. Biasing, temperature compensation, bandwidth limitation are treated as well as class A, class B and class C amplifiers. Frequency multipliers, feedback leading to the design of oscillators, modulation and demodulation completes the linear part of the course. The use of the transistor as a switch in Schmitt Triggers, multi-vibrators, NOR, and NAND gates is discussed. Frequency division, shift registers and counters are treated. The application of other devices, such as 4-layer diodes, SCR and UJT's is included. The laboratory is completely project-oriented and each student is expected to design and construct four circuits to meet given specifications.

Prerequisite: Engineering 97.357*.

Text: Millman and Halkias, *Integrated Electronics*.

References: Millman and Taub, *Pulse, Digital and Sampling Waveforms*; Seeley, *Electronic Circuits*.

First term: Lectures three hours a week, laboratory four and a half hours a week.

P.D. van der Puije

Engineering 97.459*

Radio and Microwave Link Engineering

A course chosen for its own sake as an important field of electronics engineering and also because of its suitability as a vehicle for the presentation of the design of overall systems in terms of hardware elec-

tronics and mathematical systems analysis. The material covered is relevant to the related fields of analog and digital communication links, radar, radio navigation, and radio surveying and direction finding. Common topics include: system configurations; transmitter hardware and modulators; antennas; radio wave propagation; radar range equation; effects of weather, clutter and interference; receiver hardware, demodulators and detectors.

Prerequisite: Engineering 97.454*.

Second term: Lectures three hours a week.

J.S. Wight

Engineering 97.468*

Solid State Electronics

Fundamentals of solid state physics. Injection and current flow processes in a semiconductor. Theory of the p-n junction; diode mechanism and characteristics. Bipolar transistor; internal theory, DC characteristics, charge control, Ebers-Moll relations; high frequency and dynamic properties, hybrid- π model. Device fabrication technology. Field effect transistors. Integrated circuits. Special purpose devices. Laboratory gives introduction to aspects of device mechanisms, characterization and fabrication technology.

Prerequisite: Engineering 97.357*.

First term: Lectures three hours a week, laboratory three hours alternate weeks.

R.E. Thomas

Engineering 97.469*

Integrated Circuit Design and Fabrication

A course aimed at the design of integrated circuits at the physical level in terms of available technologies, to realize specified circuit functions. Fabrication processes for integrated circuits and discrete devices, monolithic, thick and thin film technologies; are covered. Properties and design considerations for devices (diodes, bipolar transistors, junction and insulated gate field effect transistors, resistors, and capacitors) and integrated circuits are related to these processes. Linear and digital integrated circuit design examples are presented. Laboratory work involves the design and fabrication of integrated circuits.

Prerequisites: Engineering 97.468*.

References: Grove, *Physics and Technology of Semiconductor Devices*; Penney and Lau, *MOS Integrated Circuits*; Glaser and Subak-Sharpe, *Integrated Circuit Engineering*.

Second term: Lectures two hours a week, laboratory three hours alternate weeks.

R.E. Thomas

Engineering 97.475*

Electronic Properties of Materials

Electrical conduction and conductor materials; electrical insulators and dielectrics including ceramics, plastics, rubbers and composite materials; printed circuit and thin film techniques; electrical emission and emitter materials; magnetism and magnetic materials; optical properties including photographic

images and luminescence; optical materials; electronic packaging materials.

Prerequisites: Engineering 88.270* and 97.251*.

References: Ralls, Courtney and Wulff, *An Introduction to Materials Science Engineering*.

Second term: Lectures three hours a week.

S. Entwistle

Engineering 97.478*

Integrated Circuit Electronics

The course is concerned with the properties of digital and linear integrated circuits as circuit blocks and their application as components of larger systems. Aspects of design in terms of integrated circuits for the realization of required system functions are treated. An important part of the course is the laboratory in which students gain experience of the use of integrated circuits in project activities.

Prerequisite: Engineering 94.466*.

References: Carr and Mize, *MOS/LSI Design and Application Handbook*; Blakeslee, *Digital Design with Standard MSI and LSI*; Burr-Brown, *Operational Amplifiers, Design and Applications*.

Second term: Lectures two hours a week, laboratory three hours alternate weeks.

C.H. Chan, M.A. Copeland

Engineering 97.497

Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chairman of the Department of Electronics on or before the last day of classes in September.

Note:

Students will register for their projects using course number 99.497. When the project has been approved, the student will change the registration at the Faculty Registrar's Office from 99.497 to the appropriate departmental number (94.497: 97.497).

Officers of Instruction

Chairman

J.A. Goldak

Professors

M.J. Bibby

M.C. de Malherbe

J.A. Goldak

G. Kardos

J. Lukaszewicz

D.A.J. Millar

E.G. Plett

J.T. Rogers

H.I.H. Saravanamuttoo

J.Y. Wong

Associate Professors

A.N. Abdelhamid

F.W. Black

R.J. Kind

J. Kirkhope

Assistant Professor

R. Bell

Adjunct Professors

Z.S. Basinski

J.B. Findlay

R.E. Gagné

Sessional Lecturers

J.R. Baillot

F. Elfstrom

Courses Offered

Engineering 88.100

Engineering Graphics and Design

Mechanical drawing: orthographic projection; auxiliary views; sections and conventions; oblique and isometric drawings; dimensions, notes, fits and tolerances; threads and fasteners; working drawings; mapping. Descriptive geometry: point, line and plane problems; intersections and developments. Engineering communication: data presentation by graphs and charts; pictorial sketching; introduction to design. Graphical solutions: slide rules; nomographs; graphical statics including solution to simple truss problems.

Both terms: Lectures and tutorials two hours a week, laboratory four hours a week.

Engineering 88.211*

Dynamics

Kinematics and kinetics of particles: rectilinear and curvilinear motions; Newton's second law; energy and momentum methods. Kinematics and kinetics of rigid

bodies: plane motion of rigid bodies; forces and accelerations; energy and momentum methods. Mechanical vibrations.

Prerequisites: Engineering 82.111* and Mathematics 69.107* and 69.117*.

Text: Beer and Johnston, *Vector Mechanics for Engineers: Dynamics*.

One term: Lectures three hours a week, problem analysis three hours a week. Offered both terms.

R. Bell, J. Kirkhope, J.Y. Wong

Engineering 88.230*

Introductory Fluid Mechanics

Fluid properties. Units. Fluid statics; pressure distribution in fluid at rest; hydrostatic forces on plane and curved surfaces; buoyancy. Kinematics and dynamics of fluid motion: concepts of streamline, control volume, steady and one-dimensional flows; continuity, Euler, Bernoulli, steady flow energy, momentum and moment of momentum equations; applications. Introduction to laminar and turbulent flows.

Prerequisites: Mathematics 69.107* and 69.117* and Engineering 82.111*.

One term: Lectures three hours a week, laboratory and problem analysis three hours alternate weeks. Offered both terms.

F.W. Black, D.A.J. Millar

Engineering 88.240*

Introductory Thermodynamics

Basic concepts of heat, work, temperature, property, state, system, control volume. The First Law for systems and control volumes with applications, properties of pure substances, phase diagrams. The perfect gas laws and relations. The Second Law and its corollaries, entropy from classical approach. Properties of gas mixtures. Analysis of simple cycles.

Prerequisites: Mathematics 69.107* and 69.117*, Chemistry 65.111* and Physics 75.100.

Reference: Van Wylen and Sonntag, *Fundamentals of Classical Thermodynamics*.

One term: Lectures and tutorials three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

A.N. Abdelhamid, E.G. Plett

Engineering 88.270*

Elements of Materials Engineering

The student is introduced to the structure of engineering materials and their behaviour in service and manufacturing. The topics presented are the following: the structure of engineering materials; the elastic and plastic behaviour of materials; alloys, phase-diagrams, solid solutions, eutectic and eutectoid materials; steels; heat treatment and strengthening mechanisms in metals and alloys; failure mechanisms.

Prerequisites: Physics 75.100, Chemistry 65.111* and Mathematics 69.107*.

Texts: Goldak, *Materials Engineering*; Bibby, *Materials Engineering Laboratory Manual*; Goldak, *Solutions to Problems in Engineering* 88.270*.

One term: Lectures and tutorials three hours a week, problem analysis and laboratory three hours a week. Offered both terms.

M.J. Bibby, J.A. Goldak

Engineering 88.301*

Measurement and Instrumentation in Engineering

Measurement principles and basic definitions; standards. Accuracy and error analysis; measurement statistics. Instrument systems; sensing devices, transmitting devices, terminating devices. Typical systems and devices for measuring quantities such as temperature, pressure, flow, size, displacement, velocity, acceleration, force, power, stress and strain. Analog methods of measurement. Dynamics of measurement. Data presentation and curve fitting. Laboratory experience will be provided in the various laboratories of the Faculty.

Prerequisite: Third-year registration.

Text: Holman, *Experimental Methods for Engineers*.

Second term: Lectures and tutorials two hours a week, laboratory and problem analysis two hours a week.

J. Kirkhope

Engineering 88.302*

Machine Design and Practice

The design of mechanical machine elements is studied from a theoretical and practical point of view. Topics covered are: design factors, fatigue, shafting, springs, gearing, bearings, flexible drive elements, brakes and clutches, fasteners and welded structures. Problem analysis emphasizes the application to real mechanical engineering problems.

Text: Deutschman et al: *Machine Design*.

Precludes additional credit for Engineering 88.402*.

Second term: Lectures three hours a week, problem analysis three hours a week.

G. Kardos

Engineering 88.304*

Dynamics of Machinery

Kinematic and dynamic analysis and synthesis of mechanisms and machines. Design and analysis considerations in reciprocating and rotating machinery. Vibrations in machinery, vibrations of systems with more than one degree of freedom. Vibration and shock isolation. Experimental investigation of dynamic systems.

Prerequisite: Engineering 88.211*.

Precludes additional credit for Engineering 88.404*.

References: Martin, *Kinematics and Dynamics of Machines*; Thomson, *Vibration Theory and Applications*.

Second term: Lectures three hours a week.

J. Kirkhope

Engineering 88.333*

Fluid Mechanics and Heat Transfer

Review of the fundamental equations for one-dimensional ideal fluid flow, dimensional analysis

and similarity, introduction to boundary layers, the causes of drag, one-dimensional steady isentropic flow, normal shock waves, open channel flow. One-dimensional steady heat conduction, elements of potential theory for steady two-dimensional heat conduction and fluid flow, analog methods, introduction to convection and radiation heat transfer.

Prerequisite: Engineering 88.230*.

First term: Lectures three hours a week, problem analysis and laboratory three hours a week.

A.N. Abdelhamid, J. Lukaszewicz

Engineering 88.340*

Applied Thermodynamics

Mixture of perfect gases and vapours, psychrometry, combustion processes, differences between real and ideal cycles, gas cycles and vapour cycles for power and refrigeration plant, principles of turbomachines. Prerequisite: Engineering 88.240* and Third-year registration.

Precludes additional credit for Engineering 88.440*.

Reference: Rogers and Mayhew, *Engineering Thermodynamics, Work and Heat Transfer*.

Second term: Lectures three hours a week.

Engineering 88.370*

Principles of Manufacturing Engineering

Manufacturing unit processes and material considerations. Casting techniques: solidification and heat flow theory, defect formation, casting design. Metal forming: elementary plasticity theory, plastic failure criteria, force and work calculations. Powder forming techniques: theory and practice of powder consolidation, design considerations. Joining techniques: heat flow and defect formation theory, residual stresses. Machining theory and practice. Heat treatment and surface hardening: diffusion theory, principles of wear resistance.

Prerequisite: Engineering 88.270*.

Precludes additional credit for Engineering 88.371*.

References: J. Schey, *Introduction to Manufacturing Processes*; J. Datsko, *Material Properties and Manufacturing Processes*.

Second term: Lectures and tutorials three hours a week.

M.J. Bibby

Engineering 88.372*

Engineering Materials

A discussion of the general engineering basis for selecting materials in design including the materials science principles, material stability, ease of fabrication and cost. The emphasis is on presentation of a general overall view of materials. Lectures deal with ferrous and non-ferrous materials, woods, plastics, ceramics, concretes, rubbers, paints and composites. Prerequisite: Engineering 88.270*.

Second term: Lectures and tutorials three hours a week.

M.J. Bibby

Engineering 88.390*

Mechanical Engineering Laboratory

A laboratory course in which each student performs a series of laboratory exercises dealing with a wide range of mechanical engineering topics. This course is intended to give students the opportunity to relate theory and practice and to provide experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized. Second term: Laboratory six hours a week.

Engineering 88.402*

Machine Design and Practice

The design of mechanical machine elements is studied from a theoretical and practical point of view. Topics covered are: design factors, fatigue, shafting, springs, gearing, bearings, flexible drive elements, brakes and clutches, fasteners and welded structures. Problem analysis emphasizes the application to real mechanical engineering problems.

Text: Deutschman et al, *Machine Design*.

First term: Lectures three hours a week, problem analysis three hours a week.

G. Kardos

Engineering 88.403*

Mechanical Systems Design

The course emphasizes the design of mechanical systems. Topics to be covered include: establishing design criteria, conceptual design, design economics, value analysis, synthesis, optimization. The problem analysis involves synthesis of real life mechanical systems.

Prerequisite: Registration in Engineering 88.402*.

Text: French, *Engineering Design*.

Reference: Selected readings from *Machine Design*.

Second term: Lectures three hours a week, problem analysis three hours a week.

G. Kardos

Engineering 88.404*

Dynamics of Machinery

Kinematic and dynamic analysis and synthesis of mechanisms and machines. Design and analysis considerations in reciprocating and rotating machinery. Vibrations in machinery, vibrations of systems with more than one degree of freedom. Vibration and shock isolation. Experimental investigation of dynamic systems.

Prerequisite: Engineering 88.211*.

References: Martin, *Kinematics and Dynamics of Machines*; Thomson, *Vibration Theory and Applications*.

First term: Lectures two hours a week, laboratory three hours alternate weeks.

J. Kirkhope

Engineering 88.406*

Transport Technology

The course emphasizes the engineering and design principles of road transport technology. Topics to be covered include: performance characteristics, handling behaviour, and ride quality of road vehicles. The problem analysis and laboratory involve the prediction and evaluation of the performance of road transport systems.

Prerequisite: Engineering 88.211*.

Text: Wong, *Theory of Ground Vehicles*.

First term: Lectures two hours a week, problem analysis and laboratory three hours alternate weeks.

J.Y. Wong

Engineering 88.411*

Strength Analysis

This course is to extend the student's ability in design and stress analysis of machine structures. Topics include: theory of elasticity, stress function approach in elasticity, stress concentrations, experimental stress analysis, plasticity, introduction to creep analysis, bending of thin axisymmetric plates and shells, and introduction to the finite element method of stress analysis.

Prerequisite: Engineering 82.322*.

References: Budyne, *Advanced Strength and Applied Stress Analysis*; Juvinall, *Stress, Strain and Strength*.

First term: Lectures three hours a week.

R. Bell

Engineering 88.412*

Failure Analysis and Non-Destruction Testing

The course provides a basis for identifying the cause of a failure and guiding an engineer in altering design, manufacturing and operating conditions or in selecting an alternate material. The course describes: causes and consequences of failures; morphology of fracture surfaces of ductile, brittle, fatigue, creep and corrosion failures; non-destructive testing with emphasis on radiography; defects in metals. Several important case histories are discussed.

References: Wulpi, *How Components Fail*; *Source Book in Failure Analysis*, ASM 1974; Thielsch, *Defects and Failures in Pressure Vessels and Piping*; Barer and Peters, *Why Metals Fail*.

Second term: Lectures and tutorials three hours a week.

J.A. Goldak

Engineering 88.414*

Vibration Analysis

Transient vibrations; multi-degree of freedom systems; the flexibility and stiffness matrix, Dunkerley's equation, orthogonality of principal modes, method of matrix iteration, Holzer type problems, branched systems. Continuous systems: longitudinal and torsional vibration of rods, lateral vibration of beams. Vibration measurements and experimental techniques.

Prerequisite: Engineering 82.322*.

Text: Thomson, *Theory of Vibration with Applications*.
Second term: Lectures two hours a week, problem analysis and laboratory three hours alternate weeks.
J.Y. Wong

Engineering 88.430*

Control of Noise Pollution

Behaviour of sound waves. Selection of instrumentation. Practical acoustical measurements. Measurements of power level and directivity patterns. Sound propagation outdoors. Sound in small and large enclosures. Properties of porous acoustic materials. Transmission and radiation of acoustic waves by solid structures. Noise control in ventilation systems. Case histories of machine and shop quieting, office buildings and homes. Noise control in transportation.

Prerequisite: Third-year registration.

References: Beranek, *Noise Reduction*; Harris, *Handbook of Noise Control*; Kinsler and Frey, *Fundamentals of Acoustics*.

Second term: Lectures two hours a week, laboratory and problems three hours alternate weeks.

A.N. Abdelhamid

Engineering 88.432*

Fluid Dynamics

Equations of fluid dynamics for elementary control volume in common coordinate systems. Incompressible nonviscous flow. Compressible steady non-viscous flow: isentropic one-dimensional flow, normal and oblique shock waves, expansion waves, wave interaction and reflection, introduction to unsteady flow. Viscous flow: Navier-Stokes equation, Poiseuille flow, Couette flow, hydrodynamic lubrication, boundary layers, Blasius solution, approximate methods and solutions, drag, boundary layer growth and stability, separation, control techniques.

Prerequisite: Engineering 88.333*.

Text: Shapiro, *Dynamics and Thermodynamics of Compressible Fluid Flow, Volume 1*.

References: Duncan, Thom and Young, *Mechanics of Fluids*; Eskinazi, *Principles of Fluid Mechanics*.

First term: Lectures and tutorials two hours a week, laboratory three hours alternate weeks.

E.G. Plett

Engineering 88.435*

Fluid Machinery

Types of fluid machines. Dimensional analysis and similarity, performance parameters, performance characteristics, running points. Cavitation and water hammer. Velocity triangles, Euler pump and turbine equation, impulse and reaction. Radial-flow pumps, fans and compressors: analysis and design, surging, series and parallel operation. Radial-flow and mixed-flow turbines. Axial-flow pumps, fans and compressors: analysis and design by cascade and blade-element methods, staging, off-design performance. Axial-flow turbines. Fluid couplings and torque converters.

Prerequisite: Engineering 88.333*.

Text: Dixon, *Fluid Mechanics, Thermodynamics of Turbomachinery*.

References: Shepherd, *Principles of Turbomachinery*; Csanady, *Theory of Turbomachines*.

First term: Lectures two hours a week, laboratory three hours alternate weeks.

D.A.J. Millar

Engineering 88.437*

Mechanics of Flight

Elements of airplane aerodynamics; static stability and control. Performance analysis, including drag estimation, speed, payload, range, endurance, take-off and landing. Introduction to operating economics.

Prerequisite: Engineering 88.333*.

References: Anderson, *Introduction to Flight*; McCormick, *Aerodynamics of V/STOL Flight*.

Second term: Lectures and tutorials three hours a week.

F.W. Black

Engineering 88.440*

Applied Thermodynamics

Mixtures of perfect gases and vapours, psychrometry, combustion processes, differences between real and ideal cycles, gas cycles and vapour cycles for power and refrigeration plant, principles of turbomachines. Prerequisites: Engineering 88.240* and Fourth-year registration.

Reference: Rogers and Mayhew, *Engineering Thermodynamics, Work and Heat Transfer*.

First term: Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 88.441*

Power Plant Analysis

Criteria of merit; selection of power plant for transportation and power generation applications; interrelation between mechanical, thermodynamic and aerodynamic design processes; jet propulsion, turbojets and turbofans; alternative proposals for vehicular power plant; combined cycle applications.

Reference: Cohen, Rogers and Saravanamuttoo, *Gas Turbine Theory*.

Prerequisite: Engineering 88.240*.

Second term: Lectures and tutorials three hours a week.

Not offered 1980-81.

Engineering 88.443*

Energy Conversion and Power Generation

Energy sources and resources. Basic elements of power generation. Hydro-electric, fossil-fuel and fissile-fuel power plants. Other methods of conversion. Future methods of conversion. Economic and environmental considerations. Power generation systems. Future power needs.

Prerequisite: Fourth-year registration.

Second term: Lectures two hours a week, problem analysis and laboratory three hours alternate weeks, power plant visits.

J.T. Rogers

Engineering 88.446*

Heat Transfer

An introduction to the mechanisms of heat transfer with emphasis on the basic fundamentals and practical solutions. Steady and transient conduction: solution by analytical and numerical methods as well as the electrical analog techniques. Convective heat transfer: free and forced convection for laminar and turbulent flows; heat exchangers. Heat transfer by radiation between black and grey surfaces, radiation shields, solar radiation. Boiling and condensation heat transfer. Selected applications including heat pipes and environmental heat transfer processes.

Prerequisites: Engineering 88.333* and Fourth-year registration.

Text: Holman, *Heat Transfer, Third Edition*.

References: Chapman, *Heat Transfer*; Hsu, *Engineering Heat Transfer*.

Second term: Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.
E.G. Plett

Engineering 88.447*

Heating, Ventilating and Air Conditioning

Comfort. Environmental demands for residential, commercial and industrial systems. Methods of altering and controlling environment. Air distribution. Refrigeration methods, equipment and controls. Integrated year-round air-conditioning and heating systems; heat pumps. Cooling load and air-conditioning calculations. Thermal radiation control. Component matching. System analysis and design.

Prerequisites: Engineering 88.240* and Third-year registration.

Text: Stoecker, *Refrigeration and Air-conditioning*.

Reference: Carrier, Chrene, Grant and Roberts, *Modern Air-conditioning, Heating and Ventilating*.

Second term: Lectures and tutorials two hours a week, problem analysis three hours alternate weeks.

J.B. Findlay

Engineering 88.452*

Mechanical Feedback Control Systems

Mechanical, pneumatic, hydraulic and hybrid feedback control systems, analysis and synthesis. Transfer functions and stability analysis, using Laplace transforms and state-space. Laboratory exercises include setting up and analyzing pneumatic, fluidic and hydraulic control systems. Use of analog computers for simulating dynamic systems.

Prerequisites: Mathematics 69.201 and Engineering 94.361*.

Text: Raven, *Automatic Control Engineering, Second Edition*.

First term: Lectures two hours a week, laboratory three hours alternate weeks.

Engineering 88.472*

Manufacturing Processes — Deformation

Yield theories, upper bound theory applied to punching, extrusion, wire drawing, deep drawing and rolling. Powder metallurgy. Metal cutting-theory, cutting tool materials, cutting fluids, economics. Chemical and electrical machining processes.

Prerequisite: Engineering 88.270*.

Text: Backofen, *Deformation Processing*.

References: Avitzur, *Metal Forming: Processes and Analysis*; Armarego and Brown, *The Machining of Metals*.

Second term: Lectures and tutorials three hours a week.

Engineering 88.497

Engineering Project

As part of the Fourth-year project, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography etc. Each student is required to submit his engineering project proposal to the Chairman of the Department of Mechanical and Aeronautical Engineering on or before the last day of classes in September.

Department of Systems Engineering and Computing Science

Officers of Instruction

Chairman

J.S. Riordon

Professors

B.A. Bowen
D.C. Coll
D.A. George
M.A. Gullen
B. Pagurek
J.S. Riordon
C.M. Woodside

Associate Professors

R.J.A. Buhr
S.A. Mahmoud
J.E. Neilson
E.L. Sigurdson

Assistant Professors

H.I. El-Zorkany
W.R. LaLonde
C. Leung
I. Reichstein

Adjunct Professors

J. de Mercado
K. Feher
C. Kropp
C.D. Stothart

Sessional Lecturer

A. Bruzzone

Courses Offered

Engineering 94.165

Introduction to Computers

The digital computer. Number systems, representation of numbers, introduction to machine language programming and computer operation. The algorithmic approach to engineering problem solving. Programming in time-shared and batch FORTRAN. Introduction to the Sigma-9 executive. Extensive examples and problems from engineering and mathematics: iterative solutions, sorting, summing, statistics, interpolation, solution of linear and differential equations, simulation, etc.

Texts: Bergman and Bruckner, *Introduction to Computers and Computer Programming*; Kennedy and Solomon, *Ten Statement FORTRAN plus FORTRAN IV, Second Edition*.

References: Various manuals relating to usage of the university computer.

Both terms: Lectures and tutorials three hours a week, workshop one hour a week.

I. Reichstein

Engineering 94.205*

Industrial Engineering I

This course introduces the fundamentals underlying rational decision-making in large engineering systems. Concept and scope of industrial engineering methods. Static optimization: steepest descent and quadratic convergence strategies; Linear programming: the simplex method, computational aspects, duality. Network analysis; finite graphs; critical path scheduling. Applications are emphasized.

Prerequisite: Concurrent registration in Mathematics 69.201.

Reference: Daellenbach and George, *Introduction to Operations Research Techniques*.

Not offered 1980-81.

Engineering 94.261*

Electrical Energy Conversion

Fundamentals of energy: electrical and magnetic energy, electromagnetic induction and forces. Synchronous machines: single and three phase AC generation and transmission. Power transformers: ideal and practical. DC motors: equations, equivalent circuits, operating characteristics, starting and speed control. AC induction motors: torque-speed characteristic, equivalent circuit, single phase motors. Applications of power semiconductor devices: rectification and control.

Prerequisites: Engineering 97.251*..

Text: Elgerd, *Basic Electric Power Engineering*.

Second term: Lectures three hours a week, laboratory and problem analysis three hours a week.

D.C. Coll

Engineering 94.265*

Computer Methods in Engineering

Methods for problem solving and data analysis using the digital computer. Practical programming including the use of library software. Topics in numerical analysis that arise frequently in engineering problems such as: curve fitting to experimental data, integration of differential equations of engineering systems, formulation and solution of optimization problems — application to modelling of engineering systems. Applications of probability and statistics including: common distributions of random data, acceptance sampling, confidence intervals, and concepts of reliability.

Prerequisites: Engineering 94.165 and Mathematics 69.107* and 69.117*.

Both terms: Lectures three hours a week.

J.E. Neilson, B. Pagurek

Engineering 94.303*

Real-Time Computing Systems

An introduction to the use of minicomputers as real-time, interactive systems, using the PDP-11 as the primary example. Computer organization: structure, representation of instructions, numbers, and characters; addressing modes, arithmetic and logical operations. Programming techniques: assembly language

coding and interfacing to high level languages. Input/output: via program control, priority and vectored interrupts, and direct memory access. Peripherals: teletype, register, programmable clock, analog/digital converters, interactive graphics processor. Applications to digital signal processing and data communications. (Also listed as Computer Science 95.303*.) Prerequisite: Engineering 94.165 or Computer Science 95.102* or previous experience in assembly language. Text: Eckhouse and Morris, *Minicomputer Systems: Organization, Programming and Applications*.

Day division, both terms: Lectures two hours a week, laboratory two hours a week. Limited enrolment. E.L. Sigurdson

Engineering 94.304*

File Structures and Data Bases

Introduction and definitions of data base systems. File system organizations: sequential, indexed-sequential, direct access and multiring files, hybrid organization. Hardware and its parameters: mechanical storage, magnetic tapes, rotating magnetic storage and large capacity storage devices. Physical implementations: hierarchical and network structures, storage allocation. System evaluation: estimates of system usage, storage requirements and cost-benefit comparison. (Also listed as Computer Science 95.304*.) Prerequisites: Either Engineering 94.303* or Computer Science 95.201* or 95.203*.

References: Knuth, *The Art of Computer Programming, Volume III: Searching and Sorting*; The Codasyl Report.

Day division, Second term: Lectures three hours a week.

S.A. Mahmoud

Engineering 94.305*

Industrial Engineering II

Engineering decisions in the face of uncertainty. Application of simple decision trees to probabilistic planning problems. Bayesian estimation. The utility concept. Recursive formulation of multistage decision problems. Introduction to dynamic programming. Introduction to queues and their application to the operation of engineering systems.

Concurrent registration in Mathematics 69.201.

References: Wagner, *Principles of Management Science*; Au, Shane, Hoel, *Fundamentals of Systems Engineering, Probabilistic Models*.

Not offered 1980-81.

Engineering 94.310*

Systems Analysis

Introduction to the concepts and techniques of problem definition and analysis. Various approaches to system identification, specification and presentation are discussed. Students work in teams to test their analysis skills on case studies of information systems. Systems analysis tools: decision tables, flow charts, Gantt charts, activity networks, costing. Data and file description: forms-oriented techniques, languages. Document description. Phases in a project: feasibility

study, input/output analysis and design, document and file design, system design implementation and project control. The course emphasizes applications in computer-based information systems, but the techniques used are of wider applicability. (Also listed as Computer Science 95.310*.)

Reference: Burch and Strater, *Information Systems: Theory and Practice*.

Prerequisite: A full First-year credit in Computer Science.

First term: Lectures three hours a week.

J.S. Riordon

Engineering 94.356*

Automatic Control Systems I

Review of Laplace transform techniques. Effects of feedback: frequency response, pole-zero positions. Compensation: root locus, Bode plots. State variables: formulation, solution of linear systems, examples of simple second-order non-linear systems. Discrete time systems; z transforms. Signal reconstruction: sample-and-hold circuits. Introduction to optimum control: solution of linear quadratic problem.

Prerequisites: Mathematics 69.201 and Engineering 94.361*.

(Precludes additional credit for Engineering 94.455*.)

Text: Kuo, *Automatic Control Systems, Third Edition*. Second term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

D.A. George

Engineering 94.360*

Dynamics of Linear Systems

Properties of linear systems. Linear dynamic models of engineering systems. Applications of the Laplace transform. Transfer functions. Block diagrams. Frequency and time response. Effects of feedback on system response. System simulation with analog and digital computers.

First term: Lectures and tutorials three hours a week, laboratory and problem analysis three hours a week.

D.C. Coll

Engineering 94.362*

Electric Power Circuits and Machines

Single phase and three phase A.C. circuits: phasors, voltage, current, and power calculations, flicker, power factor correction, asymmetry, star and delta configurations. Power measurement and rate structures. Single phase transformer: construction, theory of operation and equivalent circuit, OC/SC tests, three phase connections, name plate data and specifications. Three phase induction motor and synchronous motor: construction, theory or operation and equivalent circuits, calculations, starting. Discussion of single phase motors.

Prerequisite: Engineering 94.361* or concurrent registration.

Text: Printed lecture notes.

Second term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

C.F. Kropp

Engineering 94.366*

Computer Applications

Analysis of engineering problems with the use of the digital computer including mathematical modelling, organization of the equations and methods of solution using analytical and numerical methods and analysis of errors associated with numerical methods. Topics in numerical methods include: solution of single algebraic and transcendental equations and systems of linear and non-linear equations; determination and use of eigenvalues and eigenvectors; curve fitting using least squares and difference tables; numerical integration, differentiation; solution of ordinary and partial differential equations. The use of the computer is an essential part of the course. (Also listed as Computer Science 95.366*.)

Prerequisites: Mathematics 69.201 and one of Computer Science 95.103* or Engineering 94.165.

Text: Southworth and Deleeuw, *Digital Computation and Numerical Methods*.

Evening division, Second term: Lectures three hours a week.

I. Reichstein

Engineering 94.367*

Switching Circuits

Boolean algebra, gates coding, combinational circuits, canonical forms, Karnaugh maps, Quine-McCluskey algorithm. Number systems: binary, binary coded decimal, two's complement. Combinatorial arithmetic. Sequential machines: counters, sequential design given a state table, analysis, state table derivation, state minimization, state assignment. Iterative networks, more combinational arithmetic. Asynchronous circuits, races, hazards, fault detection. (Also listed as Computer Science 95.367*.)

Prerequisite: Engineering 97.251* or Physics 75.236* or permission of the Department.

Precludes credit for Engineering 94.466*.

Text: Lee, *Digital Circuits and Logic Design*.

Second term: Lectures three hours a week, laboratory three hours alternate weeks.

B.A. Bowen

Engineering 94.405*

Discrete Simulation and its Applications

Simulation as a problem-solving tool. Simulation modelling perspectives. Probability concepts in simulation. Network modelling, simulation and problem solving using SLAM. Discrete event simulation using SLAM. Analysis of simulation output. Simulation languages. (Also listed as Computer Science 95.405*.)

Prerequisite: Fourth-year registration or permission of the Department.

Text: Pritsker and Pegden, *Introduction to Simulation and SLAM*.

Second term: Lectures three hours a week, problem analysis one hour a week.

H.I. El-Zorkany

Engineering 94.415*

Engineering Management

An introductory and overview course on modern management concepts; material is presented through lectures, seminars and case studies. Historical review. Basic elements, tasks, functions, and activities of the management process including planning, organizing, staffing, directing and controlling. Dilemmas and constraints. Management style. Guest lecturers on collective bargaining, on the psychology of management, etc. On completing the course the student should be able to: read and constructively criticize management literature; discuss "management" with experts in a rational manner; appreciate the management basis of the first engineering work situation.

Prerequisite: Fourth-year registration.

Evening division, First term: Lectures two hours a week, seminars three hours alternate weeks.

C.D. Stothart

Engineering 94.451*

Communication Systems

Representation of signals; Fourier series; Fourier transforms; Laplace transforms; time and frequency convolution. Amplitude modulation theory, circuits and systems; single sideband; vestigial sideband. Operational mathematics for non-stochastic signals; correlation; energy spectra. Sampling theorem; time division multiplexing; discrete Fourier transforms. Angle modulation; phase and frequency modulation theory, circuits and systems. Television and facsimile waveforms, spectra and modulation methods. Characteristics and uses of classical, transversal and recursive filters. Noise in circuits and systems. Pulse code modulation and delta modulation.

Text: Stremier, *Introduction to Communications Systems*.

References: Carlson, *Communication Systems*; Lathi, *Communication Systems*.

Second term: Lectures three hours a week, laboratory three hours alternate weeks.

D.C. Coll

Engineering 94.455*

Automatic Control Systems I

Review of Laplace transform techniques. Effects of feedback: frequency response, pole-zero positions. Compensation: root locus, Bode plots. State variables: formulation, solution of linear systems, examples of simple second-order non-linear systems. Discrete time systems; z transforms. Signal reconstruction: sample-and-hold circuits. Introduction to optimum control: solution of linear quadratic problem.

Prerequisites: Mathematics 69.201 and Engineering 94.361* or 94.360*.

Text: Kuo, *Automatic Control Systems, Third Edition*. First term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

D.A. George

Engineering 94.456*

Automatic Control Systems II

Introduction to digital control systems. Z-domain and state space analysis of linear discrete systems. Design of digital systems. Mini and micro computer applications in control. Major emphasis is placed on laboratory project work.

Prerequisite: Engineering 88.452* or 94.356* or 94.455*.

Text: Cadzow Martens, *Discrete-Time and Computer Control Systems*.

References: Kuo, *Automatic Control Systems, Third Edition*; Takahasi, Robins and Auslander, *Control*.

Second term: Lectures two hours a week, laboratory three hours alternate weeks.

H.I. El-Zorkany

Engineering 94.457*

Introduction to the Architecture of Computer Systems

This course begins with a comprehensive historical review of computing machines from early history through Pascal and Babbage to present-day architectures with emphasis on the evolution of concepts, the influence of technology, and the techniques evolved to increase performance. The second major portion of the course presents a structured view of methodologies as they currently exist (for gate, register and processor design) with particular stress on their limitations. Detailed analysis and design are then undertaken for controllers, processors and memory systems, using existing machines as examples. A range of such component implementations is extended for enhanced performance leading to discussions of super computers. Computer classification schemes are examined. The course concludes with a discussion of systems of computers and related problems. (Also listed as Computer Science 95.457*.)

Prerequisite: Engineering 94.367* or 94.466*.

Text: Hayes, *Computer Architecture and Organization*.

Second term: Lectures three hours a week.

B.A. Bowen

Engineering 94.461*

Microprocessor Systems

Introduction to micro-computer architecture. Characteristics and applications, major features of current systems. Techniques of micro-programming, examples of input/output, use of subroutines, arithmetic subroutines, logical operations, delays, time outs, holds, etc., discussion of programming languages and assemblers. Design studies will be selected from calculators, interface controllers, intelligent terminals, graphics, compilers, etc., economics and technical decisions in selecting and implementing a micro-computer system. (Also listed as Computer Science 95.461*.)

Prerequisite: Engineering 94.367* or 94.466*.

Text: Klingman, *Microprocessor System Design*.

References: Assigned papers and notes.

Second term: Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

B.A. Bowen

Engineering 94.466*

Switching Circuits

Boolean algebra, gates, coding, combinatorial circuits, canonical forms, Karnaugh maps, Quine-McCluskey algorithm. Number systems: binary, binary coded decimal, two's complement. Combinatorial arithmetic. Sequential machines: counters, sequential design given a state table, analysis, state table derivation, state minimization, state assignment. Iterative networks, more combinatorial arithmetic. Asynchronous circuits, races, hazards, fault detection.

Prerequisites: Engineering 97.251* or Physics 75.236* or permission of the Department. (Also listed as Computer Science 95.466*.)

Text: Lee, *Digital Circuits and Logic Design*.

First term: Lectures three hours a week, laboratory three hours alternate weeks.

J. Knight

Engineering 94.480*

Introduction to Software Engineering

This course introduces students to the problems and methods of specifying, designing, and producing correct, structured, and modular software. Topics to be discussed include: programming style, structured programming, top down and bottom up programming, chief programmer team concepts, information "hiding" approaches, table driven techniques, decision tables, debugging strategies, and techniques for proving programs correct. (Also listed as Computer Science 95.480*.)

Prerequisite: Computer Science 95.202* (or 95.384*) or permission of the Department.

References: Kernighan and Plauger, *The Elements of Programming Style*; McGowan and Kelly, *Top Down Structured Programming Techniques*.

Day division, First term: Lectures three hours a week.

W.R. LaLonde

Engineering 94.481*

Software Engineering Project

Students participate in a team project to develop a small piece of stand-alone software in an organized and structured fashion. Non-numeric applications are emphasized. All phases of the project are considered equally important: specification, design, implementation, testing, and documentation. (Also listed as Computer Science 95.481*.)

Prerequisite: Engineering 94.480* or concurrent registration.

Second term: tutorial three hours a week.

E.L. Sigurdson

Engineering 94.497

Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts,

bibliography, etc. Each student is required to submit his engineering project proposal to the Chairman of the Department of Systems Engineering and Computing Science on or before the last day of classes in September.

Note:

Students will register for their projects using course number 99.497. When the project has been approved, the student will change the registration at the Faculty Registrar's Office from 99.497 to the appropriate departmental number (94.497: 97.497).

Officers of the School

Director

M.R. Coote

Director, Architectural Research Group

M.R. Coote

Professors

M.R. Coote

S.G. Haider

D. Moizer

R.E. Osler

H. Sharon

J.W. Strutt

Associate Professors

C.T. Aasen

R.G. Brand

J. Flanders

E. Kayari

S. Loten

G.D. Milne

G.F. Sutton

D. Westwood

Assistant Professors

K.S. Andonian

F. Carter

N. Griffiths

R. Kuris

R. Sandrin-Litt

Associated Members of the Faculty

C.C. Gordon (*Sociology*)

P. Sharp (*Industrial Design*)

Sessional Lecturers

D. Brant

R. Botros

I. Clapperton

J.M. Comeau

W. Dawson

T. Dubicanac

B. Hobin

A. Jackson

J. Leaning

D. O'Malley

B. Pickersgill

A. Rankin

M. Thom

J. Wheeler

Adjunct Professors

G. Desbarats, *Public Works Canada*

N. Schoenauer, *McGill University*

Photographic Supervisor/Instructor

H. Schade

Advisory Council

M.R. Coote, *Chairman/Secretary*

Michael de Malherbe, *Dean of Engineering*

D'Arcy Helmer, *Architect, Ottawa*

Ian MacLennan

Guy Desbarats, *Assistant Deputy Minister (Design Services) Department of Public Works, Canada*

W.J. Thomas, *Architect, Ottawa*

Bachelor of Architecture Degree Program

The Bachelor of Architecture degree is awarded on successful completion of a five-year program of studies. The curriculum in Architecture at Carleton is expected to provide the student with:

1. An understanding of our society with an emphasis on the identification of its building problems ranging from those of rudimentary shelter to the city itself, past, present and future (the contributions of many other disciplines will be made to enhance this understanding, e.g. Sociology, Anthropology, Psychology, History, Geography, Political Science, Economics);
2. The means to analyse problems and experience in solving aspects of a wide range of building problems (the evolving design methodologies, systems analysis and the use of computers will all be relevant here);
3. The means for development of individual ability to communicate, to define problems, to take theoretical and philosophical positions, to evolve a formal vocabulary and to accomplish strategies and solutions to problems of built environment.
4. The technical and professional information and skills needed to transform the student's designs into completed buildings;
5. The opportunity to explore one or two subject areas in considerable depth, thus allowing the student to develop the beginnings of a specialized career within the broad field of architecture, e.g. administration and management, environmental control.

The curriculum will provide a highly varied experience for the student in lectures, seminars, projects and workshops. The emphasis in the program will be placed on individual growth and development. Insofar as it is feasible, part of the student's contact with the teaching staff will be on a one-to-one basis.

The resources of the Ottawa area, including those of Carleton University, are unique in their concentration of specialized personnel, laboratories, libraries and other facilities. They provide the opportunity and capability for a wide range of multi-disciplinary academic and research programs in such fields of architecture as housing, urban environmental studies and industrialized building.

Admission Requirements

First Year

To be eligible for admission to the First year of the program of studies leading to the Bachelor of Architecture degree, the applicant must have passed the Qualifying University year examinations at Carleton University in five courses with a minimum grade-point average of 4 and a grade of C- or better in Mathematics and in Physics; or must present the Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus and Physics.

Refer to the section on Admissions in the General Regulations of the Calendar for additional admissions information (pp. 29-34).

Selective Admission

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the program. Members of the Admissions Committee of the School of Architecture are available by appointment during the academic year to answer enquiries regarding the School's program.

Advanced Standing

Applications for admission with advanced standing to the Second or subsequent years of the program leading to the Bachelor of Architecture degree will be evaluated on an individual basis. Advanced standing for academic subjects completed at another university or college will be accepted if the subject is recognized as the equivalent of a corresponding subject offered at Carleton, or for a subject particularly appropriate to a degree in Architecture. Advanced standing may be recognized at any time in the program.

Readmission

Students who have been absent from the University for two consecutive Winter sessions and the intervening Summer session (except students holding a Letter of Permission from the Carleton School of Architecture) are required to apply for readmission before registration.

Applications for readmission (obtainable from the Admissions Office) must be filed before July 1 for the Winter session and before April 1 for the Summer session.

The Organization of the School

Four divisional committees have been established each responsible for areas of study related to the curriculum of Architecture.

The divisions are responsible for integrating the content of their area with that of the other divisions.

The interdisciplinary nature of certain subject areas will be of interest to students outside the School of Architecture. The involvement of faculty and students from other disciplines in these courses is actively encouraged. At the same time, Architecture students are encouraged to take courses in other disciplines across campus as part of their educational program.

A Core Program Committee is responsible for the Design Project courses and for coordination of Core courses within the overall program. Core courses are the non-elective courses.

■ Division A

History and Theory
Human Sciences
Environmental Sciences

■ Division B

Structures
Environmental Controls
Materials and Methods of Construction
Design Economics

■ Division C

General Planning
Policy Planning and Community Development
Management and Development
Professional Practice

■ Division D

Computations
Design Methodology
Design Education
Communications

Academic Clubs and Societies

Architecture Forum, twice monthly gatherings in the Pit of the School of Architecture to hear special speakers on architectural topics, followed by discussions. Co-ordinator, Gilbert Sutton.

SAAS, *School of Architecture Association of Students* organizes special events several times a year, as well as being a focus for student discussion.

Course Requirements

Except for Design Project courses and Workshop courses a full course offered in the School is three hours a week for two terms and receives one credit. A half course is three hours a week for one term and receives half credit.

Workshop courses are scheduled for one term at six hours per week of seminar and/or individual work including tutoring and receive a half credit.

Design Project courses are for 2.5 credits per year in the first two years and for 1.5 credits per term in the third and fourth years. In fifth year Design Project or Research and Development Project is for 2.5 credits per term. For 1980-81 only, the options from 1979-80 will be available for students committed to the previous program. Design Project courses are normally taught by lectures and seminars, but faculty seminar and preparation time can by agreement be rescheduled to provide individual tutorial instruction. The Design Project courses tend to require more individual work than might be indicated by the scheduled contact time.

Theories electives are to be selected from the following courses:

Architecture

- 76.307★ Theories of Environmental Design 3A
- 76.308★ Theories of Environmental Design 3B
- 76.408★ Theories of Environmental Design 4A
- 76.208★ Theories of Urban Design 1
- 76.209★ Theories of Urban Design 2
- 76.205★ Theories of Landscape Design 1
- 76.210★ Theories of Landscape Design 2

Art History

- 11.368★ Modern Architecture: The Nineteenth Century
- 11.369★ Modern Architecture: The Twentieth Century
- 11.400★ Canadian Artists and Architects

and such other courses in the field as become available and are approved by Faculty Council. A list of available approved courses will be published at registration.

Three of these courses must be passed before the end of Fourth year. Students are free to choose in what terms they take the courses. Additional Theories electives may be taken as approved electives.

Course Program

The program of study is outlined in the following charts and detailed course descriptions appear on pp. 329-338.

The program is based on a workload of six full-course equivalents for five years. All programs are subject to change according to the final availability of resources at the time of registration.

★designates a half-credit course.

First Year

Term 1

Term 2

76.120★ Theories of Environmental Design 1A
 77.111★ Structures 1
 77.130★ Building Construction 1

76.121★ Theories of Environmental Design 1B
 77.101★ Environmental Controls 1
 77.112★ Structures 2
 79.101★ Mathematics in Architecture 1

80.102 Design Project 1

Note:

Architecture 80.102 has a course value of 2.5 credits.

At registration students will be required to take a placement test administered by the Department of Mathematics. Those who fail will be required to take an appropriate remedial course. This course will not be credited towards the student's architecture program requirements, but successful completion will be required before enrolment in Architecture 79.101★ is permitted.

Second Year

Term 1

Term 2

76.203★ Theories of Environmental Design 2A
 77.200★ Environmental Controls 2
 77.211★ Structures 3

76.204★ Theories of Environmental Design 2B
 77.230★ Building Construction 2
 79.211★ Introduction to Algorithmic Problem Solving Elective★

80.202 Design Project 2

Note:

Architecture 80.202 has a course value of 2.5 credits.

It is recommended that the Second-year Elective be chosen from courses offered by other departments of the University. However, a list of courses offered by the School and designated as suitable for this purpose will also be available.

Third Year

Term 1

Term 2

1 Theories Elective★
 1 Approved Elective★
 1 Workshop Elective★

1 Theories Elective★
 1 Approved Elective★
 1 Workshop Elective★

80.304 Design Project 3A

80.306 Design Project 3B

Note:

Architecture 80.304 and 80.306 each have a course value of 1.5 credits.

Fourth Year

Term 1

Term 2

1 Theories Elective★
 1 Approved Elective★
 1 Workshop Elective★

2 Approved Electives★★
 1 Workshop Elective★

80.403 Design Project 4A

80.405 Design Project 4B

Note:

Architecture 80.403 and 80.405 each have a course value of 1.5 credits.

Fifth Year, Options 1 to 4, New Program

Term 1 (Option 1)

Term 2 (Option 1)

78.320★ Professional Practice

78.451★ Contemporary Issues

80.457 Design Project 5.1

80.458 Design Project 5.2

Note:

Architecture 80.457 and 80.458 each have a course value of 2.5 credits.

Term 1 (Option 2)

Term 2 (Option 2)

78.320★ Professional Practice

78.451★ Contemporary Issues

80.457 Design Project 5.1

80.458 Design Project 5.2

Note:

Architecture 80.461 has a course value of 2.5 credits.

Term 1 (Option 3)

Term 2 (Option 3)

78.320★ Professional Practice

78.451★ Contemporary Issues

80.460 Research and Development Project 5.1

80.458 Design Project 5.2

Note:

Architecture 80.460 has a course value of 2.5 credits.

Term 1 (Option 4)

Term 2 (Option 4)

78.320★ Professional Practice

78.451★ Contemporary Issues

80.460 Research and Development Project 5.1

80.461 Research and Development Project 5.2

Fifth Year, Options A to D, Old Program

Offered 1980-81 Session only

Term 1 (Option A)

Term 2 (Option A)

76.451★ Contemporary Issues in Architecture
1 Approved Elective★
1 Workshop Elective★

78.320★ Professional Practice
1 Approved Elective★
1 Workshop Elective★

80.453 Design Project 5A

80.454 Design Project 5B

Note:

Architecture 80.453 and 80.454 each have a course value of 1.5 credits.

Term 1 (Option B)

Term 2 (Option B)

76.451★ Contemporary Issues in Architecture
1 Approved Elective★
1 Workshop Elective★

78.320★ Professional Practice

80.453 Design Project 5A

80.456 Research and Development Project

Note:

Architecture 80.456 has a course value of 2.5 credits.

Term 1 (Option C)

Term 2 (Option C)

76.451★ Contemporary Issues in Architecture

78.320★ Professional Practice

80.453 Design Project 5A

80.455 Research and Development Project

80.456 Research and Development Project

Note:

Architecture 80.453 and 80.455 each have a course value of 1.5 credits.

Term 1 (Option D)

Term 2 (Option D)

76.451★ Contemporary Issues in Architecture
1 Approved Elective★
1 Workshop Elective★

78.320★ Professional Practice

80.455 Research and Development Project

80.456 Research and Development Project

Note:

Architecture 80.455 has a course value of 1.5 credits.

Independent Study

A student enrolled in the Bachelor of Architecture program may propose, and may be permitted to undertake an independent study in lieu of approved elective or workshop elective courses for up to one credit in each of Third, Fourth and Fifth years.

The purpose of this provision is to allow more flexibility for students to pursue a line of investigation in their own way, free of normal constraints of timetable and university locale. The independent study at the undergraduate level is to make no demands on University faculty other than those required for approval and evaluation.

In certain cases, with the approval of the department in which they are registered, graduate students enrolled in another program at the University may be permitted to enrol in a Fourth-year level Independent Study under the direction of a member of the faculty of the School. The procedures and conditions will be detailed and approved jointly by the student, the department and the adviser in the School.

Serious scholarship and research are expected and proper documentation will be required. In the case of students in Architecture, the study will be subject to the following conditions:

1. The student's standing must be clear with no deficiencies in core courses.
2. The student will register for an independent study in the term or session during which the work is to be completed. The student must submit the proposal in writing to the adviser at the time of registration outlining the objectives and direction of the study, the time and locale, resources available, submission date and other pertinent information. The subject area of the study should be identified with respect to the interests of the organizational divisions of the School of Architecture.
3. The student must have obtained the prior approval of the appropriate Divisional Chairman and prior agreement of a member of the teaching staff in that division to act as assessor for the study. That staff member will then be responsible for approval and evaluation. The divisional committee chairman's written recommendations, comments, and the credit value to be given for the study must accompany the proposal when presented to the adviser for course approval.
4. The study must be completed within the specified time and in a form agreed upon by the student and the divisional assessor.
5. The student's adviser will deliver the completed and approved proposal to the Records Office of the School of Architecture to be filed with the student's course records.

Fifth Year

(i) General

Students without clear standing will not be permitted to register in Fifth year core courses.

Before the end of the Fourth year of the program students will enter into discussions with their advisers and will select one of the options outlined in the charts.

(ii) Research and Development Project Option

Some options offer the opportunity to undertake a Research and Development project over a period of one term or two terms. The project may involve the investigation of a building, a subsystem of a building, or research into a topic related to architecture. The project must be clearly related to the courses the student has taken and must provide for an in-depth synthesis of this experience.

Students selecting an option involving Research and Development Projects for Term 1 must prepare a written proposal for submission to a Research and Development Project Review Committee two weeks after the last day for handing in term assignments at the end of the Fourth year of the program. Those electing a Term 2 Research and Development Project option must submit a similar proposal to the Committee by the last day of Summer session classes. The student proposal, in order to be considered for approval, must be submitted on forms provided for this purpose and contain the following:

- (a) A statement of purpose, intent and scope (the rationale for the project);
- (b) Statement of related academic and work experience;
- (c) The study method (work plan and schedule indicating milestones);
- (d) The proposed tutor's agreement in writing.

The Review Committee will approve or reject the proposals on the basis of the following criteria:

- (a) Evidence of a strong academic record over the whole program;
- (b) High standing in course work relevant to the project;
- (c) Favourable assessment of the student's capability to carry out the project.

The Committee will, before registration, advise the student of its decision and put its comments on the proposals in writing for the benefit of the student and the tutor and for the record.

A student whose proposal is rejected, may, at the discretion of the Committee, submit a revised proposal to the Committee in time for re-evaluation before the last day for course changes in the appropriate term. If the decision to reject the proposal stands, the student must then change the course registration to conform to Option 1 or Option A or B or wait a year before submitting a new or revised proposal. The Committee's decision at this point is final.

Students whose projects are approved will meet with their tutors at least bi-weekly to develop their project. The tutor and the student will meet with the Research and Development Project Review Committee at about mid-term and at the end of the term to review the project in detail.

After the final review, the Committee, with the tutor, will grade the project.

A project graded D+, D, D- or F is a failure and the course may be repeated. A student who receives a grade of *FNS* on a project may not re-register in a Research and Development Option, and must re-register in Option 1 or Option A to complete Fifth year. A student who undertakes a two-term project and who receives a grade of D+ or lower on the First term's work must re-register in Option 1 or Option A to complete Fifth year.

General Information

Counselling and Program Approval

Each student will be assigned a full-time faculty member as adviser who will enter into discussions with the student regarding his/her educational objectives, and assist the student on the choice of electives. Advisers may be changed with the consent of the Director. The adviser will be responsible for approving the program and course changes of the assigned individual students.

Approved Electives

A list of approved elective courses will be published at registration. All but two of the elective half courses must be from the approved list. The other two half courses are open but must be recognized for degree credit, and must not repeat the content of core courses.

Materials, Supplies and Field Trips

The program in Architecture, particularly the Design Project courses, requires that the student produce large quantities of drawings and models, as well as ozalid prints, photostats, use of other photographic media, reproductions of drawings, reports, etc. all of which can be costly. While the instructors are careful to keep the required presentations to a minimum, the students are free to, and do, experiment with many techniques and media, some of which are expensive. The School provides some of this material but the students are expected to absorb the larger portion of the cost and should budget accordingly.

Equipment for drawing, photography, etc. should be regarded as an investment, because good tools are essential and last a long time if properly cared for. An equipment list is provided as a guide to the entering student. A good quality 35mm. camera is a very useful but not mandatory item on the list and most students find they use it to such an extent that they wish to purchase one during the first year or two of the program.

Field trips to study urban development projects in other cities are a part of the program. The School usually absorbs part of the cost of transportation but students are expected to meet most other expenses while away.

Experience indicates that the student should budget about \$400 for materials, equipment and field trips per year, not including a camera.

Course Load

During the first two years of the program in Architecture, because of the limited number of student spaces, all students (with the exception of those students admitted with advanced standing or those who are repeating course work) will be required to undertake the full workload as set out in the course outlines on pp. 324-326 or as modified by these regulations.

Academic Standing

Grading System

Except for the special instance listed below, grading is consistent with the general university regulations on p. 43 of the University Calendar.

Passing Grades

The passing letter grade in Design Projects and in Research and Development Projects is C-, while it is D- in other courses.

Promotion

Students who achieve a passing grade in all courses in the program of study for their year and have a grade-point average of 3.5 without Design Project courses will be promoted to the next year of the program. In arriving at the grade-point average only the grades of courses required to make up a full program in that year will be averaged.

Grades in Design Project courses will not be averaged to arrive at a passing grade for the year.

Supplemental Examination Privileges

A student may not write a supplemental in a course graded *FNS* or *Abs*. If a supplemental examination is failed, the student must repeat the course before writing another examination in it.

Application to write supplemental examinations must be made at the appropriate Faculty Registrar's Office by the designated date. (See Examination Fees, p. 48.)

Supplemental examinations in Design Project and Research and Development courses will follow shortly after the original submission according to a timetable which will be published in the School. The maximum grade in these examinations is C-. Other supplemental examinations are graded normally.

Supplemental examinations must be written at the next supplemental examination period.

Students may apply to write supplemental examinations at educational institutions outside Ottawa.

Deficiencies and Probation

Core course deficiencies may only be carried into the next higher year. If they are not cleared, students may not take core courses in the succeeding year.

Students without clear standing will not be permitted to register in Fifth-year core courses.

A student who has failed more than one full course or two half courses or whose grade-point average without Design Project courses is less than 3.5 (after supplemental examinations) will be considered to have failed the year and if given permission to return, will return as a student on probation. Students on probation must repeat the failed courses and other courses in which their grade is less than C- and achieve a grade of C- or better in each. Electives with a grade less than C- may be replaced with other approved electives.

A student on probation may not register for core courses in any higher year.

Students who fail to clear their probationary status in two attempts will be ineligible to register in the program. A main course examination or a supplementary examination is considered an attempt.

A student who would be on probation for a second time will not be eligible to register in the architecture program.

Summer Session Design Project Program

Third- and Fourth-year Design Project courses will be offered during the Summer session for students in the Architecture degree program, subject to University requirements of minimum enrolment and the availability of resources.

Scholarships and Awards

The Faculty of the School will recommend students to the Senate for scholarships and awards available to the School. For this purpose an overall grade-point average including the Design Project courses will be calculated. Then the Design Project grade, the course grade-point average or the overall grade-point average will be used as is most appropriate for the nature of the award.

Students admitted with advanced standing whose grade-point average may not represent a true measure of their worth will be given individual consideration.

Core Courses

Prerequisites

Note: Prerequisites to core courses may not be waived except on appeal to the Committee on Standing and Promotion and with the permission of the Faculty Council.

■ Division A

A sequence of courses that broadly sets out a theoretical context for Environmental Design. Relationships introduced and later explored in depth involve individual, professional, societal, historical, ecological, psychological (behavioural), symbolic, philosophical and procedural perspectives.

Architecture 76.120★

Theories of Environmental Design 1A

Day division, First term: Lectures three hours a week.

Architecture 76.121★

Theories of Environmental Design 1B

Day division, Second term: Lectures three hours a week.

Architecture 76.203★

Theories of Environmental Design 2A

Day division, First term: Lectures three hours a week.

Architecture 76.204★

Theories of Environmental Design 2B

Day division, Second term: Lectures three hours a week.

Architecture 76.451★

Contemporary Issues in Architecture

An explanation of the nature, attitudes towards, and impacts and resolutions of some of the major issues of today confronting architecture theory and practice. The meaning and significance of issues such as energy shortage, professionalism, loss of human scale, the objective-subjective controversy in design, the criticalness of sophisticated technology and participation in design are critically developed, analysed, synthesized and extended.

Prerequisite: Clear standing to Fifth year.

Day division, First term: Lectures three hours a week.

■ Division B

Architecture 77.101★

Environmental Controls 1

Design for environmental control; comfort parameters; enclosure performance.

Day division, Second term: Lectures three hours a week.

Architecture 77.111*

Structures 1

Statics and strength of materials. Mechanical properties of structural materials. Application of statics and strength of materials to problems of structural elements in the context of total building structures. Extensive use of demonstration models.

Day division, First term: Lectures three hours a week, laboratory two hours a week.

Architecture 77.112*

Structures 2

Behaviour of structural elements and simple systems under load conditions of increasing severity. Simplified design of structural elements and systems. Comparative estimation of stresses and deformations. Use of structural testing laboratory to demonstrate behaviour path to failure.

Prerequisite: Architecture 77.111*.

Day division, Second term: Lectures three hours a week, laboratory two hours a week.

Architecture 77.130*

Building Construction 1

A study of design and construction processes. An introduction to drawings and specifications, followed by a detailed study of construction techniques used by the principal building trades to translate the design into a building. Emphasis is placed on the proper selection of sub-systems and on the factors which affect the quality of construction.

Day division, First term: Lectures three hours a week.

Architecture 77.200*

Environmental Controls 2

Continuation of Architecture 77.101* with additional coverage of building servicing and the interaction of environmental conditions with space enclosures. Aspects of the course are extensively reinforced by applications in design projects.

Day division, First term: Lectures three hours a week, problems three hours a week.

Architecture 77.211*

Structures 3

Introduction to structural planning: study of factors involved in synthesis of a suitable structural scheme. Load intensities, building codes and safety considerations. A survey of structural systems and details.

Prerequisite: Architecture 77.112*.

Day division, First term: Lectures three hours a week, laboratory two hours a week.

Architecture 77.230*

Building Construction 2

A study of building enclosures for the Canadian climate. A review of the principles of heat transfer, psychrometry and air movement. The techniques used to control the movement of heat, water and air through the enclosure. The application of these techniques to

roofs and windows and to wood, concrete, masonry and metal walls.

Day division, Second term: Lectures three hours a week.

■ **Division C**

Architecture 78.320*

Introduction to Professional Practice

An overview of the practice of architecture. Topics include professional organization and conduct, the architect's services, business law, office organization and management, contract documents, building codes, contract management, cost control, accounting and site supervision. Presentation through lectures, guest speakers and case studies from professional practices and construction representatives in the area.

Prerequisite: Clear standing to Fifth year.

Day division, Second term: Lectures three hours a week.

■ **Division D**

Architecture 79.101*

Mathematics in Architecture 1

Basic mathematical skills for architecture students. Selected topics from arithmetic, algebra, geometry, trigonometry, calculus and numerical methods. Presentation through numerous applications of these mathematical areas to problems of architecture and related fields.

Day division, Second term: Lectures three hours a week.

Architecture 79.211*

Introduction to Algorithmic Problem Solving

An introduction to the solving of problems by algorithms. The morphology of the algorithmic approach to problem solution. The use of the flow chart as a verification of the logic processes of an algorithmic solution. The use of the computer as a major tool in implementing algorithmic solutions. Essential skills in computer programming using the BASIC programming language.

Day division, Second term: Lectures two hours a week, problems two hours a week.

■ **Design Projects**

A series of design projects which are appropriate in scale and complexity with emphasis in specific topic areas (see below). Seminars are used for input of project-based information, for criticism and for evaluation. Lectures, visits and discussions will be organized on subjects related to the topic area of the design projects.

Architecture 80.102

Design Projects 1 (2.5 credits)

Topic Term 1: Basic Design. Topic Term 2: Introduction to function and behaviour.

Day division, First and Second terms: Two three-hour seminars a week.

Architecture 80.202

Design Projects 2 (2.5 credits)

Topic Term 1: Introduction to site and climate. Topic

Term 2: Introduction to technology.

Prerequisite: Architecture 80.102.

Day division, First and Second terms: Two three-hour seminars a week.

Architecture 80.304

Design Project 3A (1.5 credits)

Topic: Built form influenced by environmental factors.

Prerequisite: Architecture 80.202.

Day division, First term: Two three-hour seminars a week.

Architecture 80.306

Design Project 3B (1.5 credits)

Topic: Built form influenced by function and behaviour.

Prerequisite: Architecture 80.202.

Day division, Second term: Two three-hour seminars a week.

Architecture 80.403

Design Project 4A (1.5 credits)

Topic: Built form influenced by technology.

Prerequisites: Architecture 80.304 and 80.306.

Day division, First term: Two three-hour seminars a week.

Architecture 80.405

Design Project 4B (1.5 credits)

Topic: Built form influenced by values.

Prerequisites: Architecture 80.304 and 80.306.

Day division, Second term: Two three-hour seminars a week.

Architecture 80.453

Design Project 5A (1.5 credits)

Synthesis of influences on built form.

Prerequisite: Clear standing to Fifth year.

Day division, First term: Two three-hour seminars a week.

Architecture 80.454

Design Project 5B (1.5 credits)

The project is selected according to the needs of the class group to round out their design experience. A comprehensive solution is required. This project carries the workload of three half-courses. Seminars are used for project related input of relevant data and for evaluation of student projects.

Prerequisite: Clear standing to Fifth year.

Day division, Second term: Three three-hour seminars a week.

Architecture 80.455

Research and Development Project (1.5 credits)

Open only to students undertaking an approved two-term Research and Development Project. The First term is spent on the preliminary phase of the project to a level of detail as agreed by the tutor, with the

objective of producing a specific product for review by the Research and Development Committee by the end of the term. The Committee will set up the next term's work on the project. The project may be an investigation or design of a building, building system, component, or an investigation of an environmental design issue, and the product may involve written or graphic material or a combination thereof, supplemented by models, mockups, field surveys, etc.

Prerequisite: Clear standing to Fifth year.

Day division, First term.

Architecture 80.456

Research and Development Project (2.5 credits)

This project may be a continuation of the project undertaken in Architecture 80.455 if approved, or a complete project in itself on a similar topic or basis. Where it is a continuation, successful completion of Architecture 80.455 is prerequisite.

Day division, Second term.

Architecture 80.457

Design Project 5.1 (2.5 credits)

A faculty initiated major design project where the student integrates the experience of previous design projects with the concentration developed in the elective program.

Prerequisite: Clear standing to Fifth year.

Day division, First term: Three three-hour seminars a week.

Architecture 80.458

Design Project 5.2 (2.5 credits)

Student-initiated design project. Students are expected to have discovered a building design problem to be developed in depth. With the comments and advice of the studio faculty, the student defines a suitable project for this purpose and sets out parameters for the study.

Prerequisite: Clear standing to Fifth year.

Day division, Second term.

Architecture 80.460

Research and Development Project 5.1 (2.5 credits)

The project may be an investigation of a building, a sub-system of a building or research into a topic related to architecture. The work is developed under the direction of a tutor. The Research and Development Project Committee, with the tutor, evaluates the finished project.

Prerequisite: Clear standing to Fifth year.

Day division, First term.

Architecture 80.461

Research and Development Project 5.2 (2.5 credits)

This project may be a continuation of the project undertaken in Architecture 80.460 if approved, or a complete project in itself on a similar topic or basis. Where it is a continuation, successful completion of Architecture 80.460 is prerequisite.

Day division, Second term.

Elective Courses

Prerequisites

Note: Prerequisites to elective courses may be waived where noted, by permission of the School.

■ **Division A**

Architecture 76.102★

Colloquium

The context for the development and application of knowledge related to design.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.202★

Colloquium

Environment as context for designers.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.205★

Theories of Landscape Design 1

This is an introductory course, with a strong historical emphasis and progression, intended to bring to the student an awareness of mankind's profound concern in the past with landscape architecture, the 'total organization of outdoor space'. A consideration of cultural, climatic, economic and political factors provide a frame of reference for the understanding of the spatial organization in cities, towns, and other areas of human settlement.

Day division, First term: Lectures three hours a week.

Architecture 76.206★

Introduction to Industrial Design

Offered in the School of Industrial Design as Industrial Design 85.100★.

Architecture 76.207★

Theories of Visual Design 1

An introduction to the field of visual design including an historical overview of the development of design theories, principles, and methods. See also related workshop, Architecture 79.340★.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.208★

Theories of Urban Design 1

History of the city as a physical artifact. Study of the physical growth of cities as an expression of developing social and cultural values and structures, as well as with reference to aesthetic ideals. See also related workshop, Architecture 76.328★.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.209★

Theories of Urban Design 2

Consideration of the forces in different periods determining the character and principal function of cities: military, religious, commercial, political, industrial, post-industrial and utopian. Readings in the fields of literature, art, futures and history.

Prerequisite: Architecture 76.208★ or permission of the School.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.210★

Theories of Landscape Design 2

This course is an historical consideration of man's relationship with nature and outdoor space as it is manifest in designs on the land — private and public gardens, parks and parkways, urban and regional design. This relationship is described in relation to the cultural context and metaphysical beliefs that have shaped environmental design from the eighteenth century to the present, emphasizing the origins of contemporary approaches to land.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.211★

Industrial Design Analysis

Offered in the School of Industrial Design as Industrial Design 85.101★.

Architecture 76.212★

Theories of Visual Design 2

An analytical study of design principles, including arrangement, composition, form, order, rhythm, colour and texture.

Prerequisite: Architecture 76.207★ or permission of the School.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.301★

Colloquium

The interdisciplinary context of design methodology.

Day division, First or Second term: Three hours a week.

Architecture 76.302★

History of Canadian Environment

Evolution of the Canadian landscape from Confederation to the present with emphasis on the influence of recreation, conservation, transportation, the agricultural landscape and new forms of collective settlements. In the latter half this course operates as a seminar, with students delivering papers on aspects of Canadian culture that affect the landscape.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.305★

Workshop: Archeology of Modern Architecture

Buildings designed by leading twentieth-century architects are studied with a particular emphasis on

physical form, organization, space and detailing through graphic studies and models. Attributes of form are related to design issues and philosophies as presented in contemporary writings.
Day division, First or Second term: Six hours a week.

Architecture 76.307★

Theories of Environmental Design 3A

Day division, First term: Lectures three hours a week.

Architecture 76.308★

Theories of Environmental Design 3B

Day division, Second term: Lectures three hours a week.

Architecture 76.324★

Social Environment Systems

An examination of relationships between man and the environment he has built. The course considers this "built environment" as the product of social processes and as an influence on these processes at varying levels of organization. Lectures by the members of the Faculty of Architecture, and Sociology and other departments are supplemented by guest lecturers and readings.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.325★

Workshop: Man-Environment Interface I

Seminars, individual and interdisciplinary team projects developing and contributing knowledge and expertise in the area of relationships between man and the environment he has created. (Architecture 76.324★ and 76.325★ are listed in the Department of Sociology and Anthropology as the two-term course Sociology 53.335.)

Day division, First and/or Second term: Six hours a week.

Offered concurrently with Architecture 76.425★ and 76.426★.

Architecture 76.326★

Human Factors in Environmental Design

Relation of human physiology to various modes of influence with an emphasis on the built environment, applications to environmental design of methods and findings from physiology and psychology.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.328★

Workshop: Case Studies In Urban Design

Building on Architecture 76.208, students critically examine selected examples of historical and contemporary urban design as physical artifacts.

Prerequisite: Architecture 76.208★ or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 76.401★

Colloquium

Intuition and Creativity: an exploration into the nature and essence of the creative self.

Day division, First or Second term: Three hours a week.

Architecture 76.408★

Theories of Environmental Design 4A

Day division, First term: Lectures three hours a week.

Architecture 76.423★

The Human Development/Built Environment Interface I

Views of man as a developing being interacting with his physical and institutional environment: critical facilities, encounters and change-strategies in this process of interaction; the content of human development; the concept of developmental sequences, stages and life cycles; total environments and world views. Emphasis on changing individuals, physical and institutional environments.

Prerequisite: Architecture 76.324★ or permission of the School.

Day division, First or Second term: Lectures three hours, seminars three hours a week.

Architecture 76.424★

The Human Development/Built Environment Interface 2

Applies the developmental insights acquired through Architecture 76.423★ to particular problem areas such as: education and learning environments; leisure and leisure environments; housing and the family. Explores how, why, when and where the built environments facilitate or retard developmental processes.

Prerequisite: Architecture 76.423★ or permission of the School.

Day division, First or Second term: Lectures three hours a week.

Architecture 76.425★

Workshop: Man-Environment Interface 2

Examination of developing human beings and the built environment, identification of problem areas and the generation of new physical and human patterns which adjust to changing environmental conditions while enhancing human development.

Prerequisite: Architecture 76.424★ or permission of the School.

Day division, First and/or Second term: Six hours a week.

Offered concurrently with Architecture 76.325★ and 76.426★.

Architecture 76.426★

Workshop: Man-Environment Interface 3

Using knowledge, criteria and research methods from the human sciences, students in this workshop study and make proposals for changing environmental designs or for creating new designs. The emphasis is on complex environments with in-depth explorations of part or all of the design process.

Prerequisite: Architecture 76.425★ or permission of the School.

Day division, First or Second term: Six hours a week. Offered concurrently with Architecture 76.325★ and 76.425★.

Architecture 76.488
Independent Study

■ Division B

Architecture 77.300★

Lighting in Architecture

Specifications for lighting based on visual performance and subjective preference. Appropriate design techniques for daylight and electric light assessed by model and full scale installations. Topics may include: derivation of units, scalar and vector luminance, subjective appraisal and preferred lighting configurations, I.E.S. recommendations, working plane and illuminance design, display lighting and exterior lighting.

Day division, First or Second term: Lectures two hours and laboratory two hours a week.

Architecture 77.302★

Acoustics in Architecture

Recapitulation of fundamentals. Sound in enclosures including interior design of auditoria and special applications. Sound reproduction and reinforcement systems. Acoustic privacy and protection, sound control in buildings, materials for noise control, community noise, industrial noise. Acoustic measurements and instrumentation.

Day division, First or Second term: Lectures two hours, laboratory two hours a week.

Architecture 77.303★

Energy and Form

The purpose of the course is to provide the student with a body of knowledge concerning energy as a criterion in decision-making for architectural design. Specifically, the course covers conventional energy resources and the state of the art of alternative energy resource systems with respect to building shape, size, materials, openings, orientation, siting and use.

Day division, First or Second term: Lectures three hours a week.

Architecture 77.304★

Workshop: Energy and Form

Study of the relationship between environmental factors, energy and architectural form. Emphasis is placed on explorations into ways in which buildings and building elements can be planned and designed so as to take advantage of natural cycles in order to minimize the need for supportive energy inputs.

Day division, First or Second term: Six hours a week.

Architecture 77.314★

Structural Analysis

Offered in the Department of Civil Engineering as Engineering 82.420★.

Architecture 77.316★

Design of Structural Steel Components

Offered in the Department of Civil Engineering as Engineering 82.425★.

Architecture 77.320★

Industrialized System Building: Principles, Classification and Selection

A study of the principles of this approach to design and manufacture of buildings. A brief survey of the historical factors forcing changes in the building industries of the world. This is developed by a review of existing systems using the technique of multi-parameter classification and selection by profile matching.

Day division, First or Second term: Lectures three hours a week.

Architecture 77.326★

Workshop: Space Enclosure Systems

The exploration of space enclosure systems for a wide range of environments.

Prerequisite: Architecture 79.320★ or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 77.330★

Performance of Building Materials 1

Study of materials available for building with emphasis on their structure, properties, application and sustained performance over the life of a building.

Day division, First or Second term: Laboratories, lectures, field trips four hours a week.

Architecture 77.333★

Performance of Building Materials 2

A look at how man develops building skills in the use of material and how, with the development of raw materials, technologies and industrial processes, new ways of thinking about materials and methods influence the design process. Investigation is done into many relevant building types to look at how materials and building elements have been used. Field trips are arranged.

Day division, First or Second term: Laboratories, lectures, field trips four hours a week.

Architecture 77.335★

Workshop: Materials Application

Application of building materials, including the forming of building parts and the design of joints for performance and assembly. Practical constructions using new technology are emphasized.

Prerequisite: Architecture 77.330★ or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 77.350★

Design Economics

Principles of building economics. Determinants of building costs and their prediction. Discussions on

uncertainty and investment economics. Systems and techniques of creative cost control for buildings during schematic design, design development, construction document preparation and construction. Prime emphasis on the economic evaluation and choice from among alternatives during all phases of design process.

Day division, First or Second term: Three hours a week.

Architecture 77.420*

Structure and Form

The challenge of space enclosure and spanning and its relationship to architectural form in history. Basic modes of force transfer and corresponding elements of structural form. Aggregation of form elements within the laws of geometry and physical stability. Discussion of physical-structural and form characteristics of a wide variety of structural types like cables, membranes, shells, arches, domes, trusses, slabs, folded planes, beams, frames and grids.

Day division, First or Second term: Lectures three hours a week.

Architecture 77.424*

Structural Planning in Architecture

Structural planning process. Values, contexts, criteria and parameters of structural planning. Role of information and codes. Classification and comparative study of structural systems. Interaction and integration of structures with other building systems. Structural details. Structural planning data and guidelines. Case studies and exercises. (Also listed as Engineering 82.430*.)

Day division, First or Second term: Lectures three hours a week.

Architecture 77.425*

Workshop: Industrialized System Building

The design of building system components, control methods, or philosophies to meet prescribed ranges of conditions.

Prerequisite: Architecture 77.320* or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 77.426*

Workshop: Structural Planning

Creative synthesis of structural schemes within the total context of building design. Methods of analysis applied to particular problems. Form and function. Case studies. A significant structural design effort is required.

Day division, First and Second term: Six hours a week.

Architecture 77.428*

Workshop: Structure and Form

Study of structural nature of non-conventional space enclosure systems like cable structures, membranes, shells, submerged structures, excavated structural forms and lunar structures.

First or Second term: Six hours a week.

Architecture 77.432*

Manufacturing Processes and Materials

Offered in the Department of Mechanical and Aeronautical Engineering as Engineering 88.371*.

Architecture 77.440*

Design for Construction

A series of lectures and visits to building sites and subcontractors' plants to study the building process as it is affected by the architect's decision. Contractors and subcontractors participate. Analysis of decisions taken and methods used. Elemental cost analysis. Estimating costs from sketches.

Prerequisite: Architecture 77.330* or permission of the School.

Day division, First or Second term: Visits, lectures, seminars three hours a week.

Architecture 77.488

Independent Study

■ **Division C**

Architecture 78.301*

Workshop: Land-Use Analysis

An introduction for students of architecture and other disciplines to the broad concepts of environmental design, based on the necessity of an ecological approach to land-use planning. It includes the history of North American concern with the land as a resource; theories and methods of land-use analysis that result from nature of recent concern; and selected illustrative case studies. Students will work in teams with the help of the instructor, other university faculty members and those engaged in government activity in this field, to analyse and plan for selected areas.

Day division, First or Second term: Six hours a week.

Architecture 78.310*

Land Development

An overview of the land development and redevelopment process and an exploration of more effective ways of participation in it. An actor-orientated approach is taken. Different participants explain their role in the process and the nature and source of information required for decision making. Case studies are used to illustrate the market studies, development feasibility, impact of development controls, emerging citizen roles, cost/benefit analysis of development alternatives, urban gaming and development trends.

Day division, First or Second term: Three hours a week.

Architecture 78.319*

Workshop: Land Development

Introduction to the land development and redevelopment processes through application of knowledge acquired in previous studies and taken from the field. Focus on team projects supported by guest lecturers, field investigations and project discussions.

Prerequisite: Architecture 78.310* or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 78.323★

Workshop: Landscape Architecture

The purpose of this course is to engage students directly in the concepts and creation of landscape architecture appropriate in an urban setting; it is hoped as a result of this experience that they may make a more meaningful and useful contribution to environmental/urban design. The indoor-outdoor relationship, the functional use of plant materials, considerations of energy, light, climate, transportation, circulation, side-lots, set backs, zoning restrictions and building codes are considered, and applied to practical design problems.

Day division, First or Second term: Six hours a week.

Architecture 78.329★

Workshop: Professional Practice

An introduction to the application of various components of a professional architectural practice. Client requirements, contract and project management, personnel and office management, specifications, cost control, etc., are developed as parts of the building process.

Day division, First or Second term: Six hours a week.

Architecture 78.330★

Community Development

A study of leading issues and problems in Canada's urban communities: neighbourhood preservation and planning, heritage conservation, social animation, community organization, citizen power, advocacy planning, community development, corporations, cooperative housing, social planning. Overviews and case studies, lectures and guest lecturers.

Day division, First or Second term: Three hours a week.

Architecture 78.339★

Workshop: Community Development

Field investigations, team projects and seminars in community development issues and problems in Canada.

Prerequisite: Architecture 78.330★ or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 78.340★

City Organization and Planning Processes

An overview of the structure, form and functioning of Canadian and other countries' cities; methods for intervening in and directing city processes and solving city problems: an introduction to urban problems, potentials and solutions. Topics include: physical infra-structure and forms of cities; urban facilities and networks; ecosystems, demography and social organization, and government and politics; quality of life, goals, and perceptions of urbanites; urban management, development, regulation and codes, design, planning and policy-making. Lectures, guest lecturers, reading assignments.

Day division, First or Second term: Three hours a week.

Architecture 78.344★

Urban Design Practice

An overview of principles, methods and processes applicable to urban design problems in cities today. The role of urban design in the formation of public policies or programs for controlling or influencing development. The emphasis is on the examination of the urban design process, including analysis of urban systems and sub-systems; solution development and implementation strategies.

Prerequisite: Architecture 76.208★ or 76.308★ or permission of the School.

Day division, First or Second term: Lectures three hours a week.

Architecture 78.345★

Workshop: Urban Design

A workshop program investigating aspects of design problems that relate to the wider context of regional and urban planning. This involves examination of techniques used for the formulation and implementation of design strategies that shape complex urban environments. Coordinated and offered jointly with Architecture 78.349★. See also Architecture 76.208★ and 76.209★.

Day division, First or Second term: Six hours a week.

Architecture 78.349★

Workshop: City Organization and Planning Processes
Interdisciplinary investigation, analysis and synthesis of the institutions, processes, environments and demography of Canadian cities. Seminars, guest lecturers, field investigations and individual and team projects. Coordinated and offered jointly with Architecture 78.345★.

Prerequisite: Architecture 78.340★ or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 78.488

Independent Study

■ Division D

Architecture 79.201★

Mathematics in Architecture 2

An introduction to mathematical reasoning, with particular applications to architecture. Topics include: isometries of the Euclidean plane and three-space; symmetry groups applied to designs, frieze patterns, wallpaper patterns and uniform polyhedra; graph theory used to solve planning problems; perspective and orthogonal projects.

Day division, First or Second terms: Lectures three hours a week, problems one hour a week.

Architecture 79.300★

Problem-Solving Methods and Models 1

An introduction to the solutions of problems by mathematical models. The morphology of mathematical model building is the major emphasis of this course. The difference between deterministic and probabilistic

models. An introduction to the basics of the theory of probability. An introduction to the basics of the theory of statistics. An introduction to the basics of graph theory. Supplementary topics discussed as examples; queues, network analysis.
Day division, First or Second term: Lectures three hours a week.

Architecture 79.301*

Problem-Solving Methods and Models 2

A review of the state of the art in design methods. Topics include decision-making models, the nature of the design act, the politics of design decision-making, programming techniques, strategy selection, ideation, information transfer, evaluation. Lectures, guest speakers, reading assignments, discussion.
Day division, First or Second term: Three hours a week.

Architecture 79.312*

Problems In Computing

Introduction to various types of non-numeric data, its representation within primary and secondary storage, and the manipulation of various representations. Comparative evaluation of languages for non-numeric problems. Student projects.

Prerequisite: Permission of the School.

Day division, First or Second term: Lectures two hours a week, laboratory two hours a week.

Architecture 79.315*

Computer-Aided Space Planning

An introduction to computer-aided plant layout and space planning techniques related to the use of two major computerized systems, CRAFT and CORELAP, will be considered. Other topics include: The McHarg model and site planning by computer; artificial intelligence and C. Eastman's General Space Planner; clustering methods and polyominoe-like techniques; graph theoretical models; information structure and data base consequences.

Prerequisite: Architecture 79.211* or equivalent.

Day division, First or Second term: Lectures, seminars three hours a week.

Architecture 79.320*

The Geometry of Form

The development of a basic vocabulary form through identification of the rules for combining and relating the minimal identifiable elements of geometric form. Investigation of the methodologies for changing those identities in order to generate entirely new forms. Study of planar and space geometries with special emphasis on polygons and polyhedra, their singular, close and loose-packing properties. Discussions on form; geometric operations, like vertex motion, folding, reciprocation and truncation.

Text: Williams, *Natural Structure*.

Day division, First or Second term: Lectures three hours a week.

Architecture 79.325*

Workshop: Experimental Design

Introduction to experimental design emphasizing simulation; graphical, analog and mathematical modelling. Topics include computer simulation, physical and theoretical model testing, complete and incomplete design. Student projects.

Day division, First or Second term: Six hours a week.

Architecture 79.326*

Workshop: Computer Applications

Applications of existing computer programs and programming techniques to various architectural problems. Software, state of the art and applications will be extensively covered. Project work may be user-orientated on the basis of existing software or development of original work. Student projects.

Day division, First or Second term: Six hours a week.

Architecture 79.327*

Workshop: Computer-Aided Design

Adaptation of design techniques to computer application. Bifocal approach offers the opportunity for application of existing software to interactive graphic systems and development of heuristic design models based on original work. Student projects.

Prerequisite: Permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 79.328*

Workshop: Computer Graphics

Use of interactive graphics hardware systems and study of file structures for graphics processing. Developmental work leading toward computer-generated art as well as implementation of production-orientated user display software is encouraged. Student projects.

Prerequisite: Architecture 79.312* or permission of the School.

Day division, First or Second term: Six hours a week.

Architecture 79.329*

Workshop: Problem Solving

Development work in applications of problem-solving techniques to design problems. Areas covered include problem definition, design alternatives, evaluation criteria, emphasizing strategies, models and methods: term project.

Prerequisite: Architecture 79.301*.

Day division, First or Second term: Six hours a week.

Architecture 79.330*

Workshop: Cooperative Problem Solving

Group training in the creative exchange and development of ideas; group problem-solving sessions focus on participation and roles, listening, itemized response, use of metaphor and analogy, forcefit, closure, and follow-through techniques; visual brainstorming and generative graphics. Student project. Limited enrolment.

Day division, First and Second terms: Six hours a week.

Architecture 79.331*

Workshop: Building Programming

A workshop concerned with the development and application of systematic techniques in the preparation of building programs. The topic is treated as a problem in information management, with particular emphasis on information transformation, and transfer in relation to problem boundary definition, directives formulation and graphic analysis.

Day division, First or Second term: Six hours a week.

Architecture 79.340*

Workshop: Visual Design

A workshop program to increase the student's capacity to visualize and communicate in several graphic media, and also to increase sensitivity to form, structure, space, texture and colour.

Day division, First or Second term: Six hours a week.

Architecture 79.341*

Workshop: Photography

Experimentation with photography as a means of visual research and communication of the social and built aspects of the environment. Familiarity with the basic techniques of photography is required as a prerequisite. Students are required to prepare a photographic essay that explores some aspect of man's relationship with the built environment.

Permission of the School is required.

Day division, First or Second term: Six hours a week.

Architecture 79.351*

Design Education

Review of extant education methods and related learning theories. Development of various approaches to the education of designers: awareness, skills and knowledge; analytic, synthetic and evaluative capabilities.

Day division, First or Second term: Lectures three hours a week, laboratory two hours a week.

Architecture 79.488

Independent Study

■ **Design**

Architecture 80.351*

Studies in Design

Traditional, present and possible future influences on the design of buildings and their context.

Day division, First and/or Second term: Lectures and/or seminars three hours a week.

Officers of the School

Director

W. Gilles

Professor

W. Gilles

Visiting Professor

Each year a foreign industrial design educator is invited to the School as a Visiting Professor.

Associate Professors

J.R. Giard

G.A. Lynn

P.R. Sharp

Assistant Professors

M. de Leeuw

J.S. Ostiguy

Sessional Lecturers

R. Crump

G.F. Singer

K. van der Veen

General Information

Industrial Design* is a creative activity, the aim of which is to determine the formal qualities of objects produced by industry. These formal qualities include the external features but are principally those structural and functional relationships which convert a system to a coherent unit, both from the point of view of the producer and of the user.

Industrial Design tends to embrace all aspects of human environment which are conditioned by industrial production.

In the future, the traditional activity of design for growth may continue to be essential. It will be necessary, however, to develop a design activity which contributes to the regulating of growth processes, the conservation of resources and the protection of the environment.

*As defined by the International Council of Societies of Industrial Design.

Bachelor of Industrial Design Degree Program

In September 1973, Carleton University initiated the First year of a new four-year program leading to the Bachelor of Industrial Design degree.

The Bachelor of Industrial Design degree is awarded on successful completion of the four-year program of

studies. The program is structured to meet the requirements of the developing profession of Industrial Design. This implies an education with a solid general background, enabling the designer to communicate with experts in other disciplines. It also implies development of expertise in designing for one or more specific sectors in the wide field of application of Industrial Design. The program of studies, which was initiated as a joint venture of the Faculty of Engineering and the School of Architecture, therefore, provides for an Engineering-oriented as well as an Architecture-oriented stream, together with all possibilities for the integration of both.

Admission Requirements

First Year

The Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus, Chemistry and Physics; or the successful completion of the Qualifying University year in Science or Engineering.

Entering high school students who are fully qualified academically are expected to arrange for a personal interview with a member of the School's faculty. Such an interview will give the School a clearer idea of the seriousness of the candidate and afford the candidate an opportunity to see and learn about the School's program actively. Applicants who make no effort to arrange an interview may find themselves at a serious disadvantage in the competition for this limited-enrolment program. On the other hand, students who present a portfolio in addition to their academic qualifications may find themselves in an exceptionally good competitive position.

Advanced Standing and Transfer of Credits

Applications for admission with advanced standing to the Second or subsequent years of the program leading to the Bachelor of Industrial Design degree will be evaluated on an individual basis. Advanced standing for academic subjects completed at another university or college will be evaluated for equivalence to the program requirements of the School of Industrial Design. Transfer of credit for projects in an Industrial Design, Engineering or Architecture program completed at another university or college may also be considered, provided the grade is satisfactory and the student shows evidence of aptitude for design studio work by the production of a portfolio of original drawings or photographs, etc., and as a result of an interview with a designated member of the faculty of the School. Applicants who have graduated from an Engineering program at an accredited university will be granted advanced standing, and can complete the Bachelor of Industrial Design degree in a two-year specialized program.

Mature Matriculation

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and who are twenty-one years of age or over, by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program.

Selective Admission

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission, therefore, will be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Course Requirements

First Year

See charts First year Engineering, p. 291 and First year Architecture, p. 324.

First year for students enrolled in the School of Industrial Design is, for the most part, identical to either First year of the Faculty of Engineering or of the School of Architecture, depending on the orientation stream the student wishes to follow.

Students in Industrial Design must basically take the course load with other students in Engineering or in Architecture. Some courses in the First year will be given by staff from the School of Industrial Design.

While following the program of Architecture or Engineering in First year, students registered in the B.I.D. program must complete the following courses in order to follow the prescribed Second year program:

Industrial Design

85.100★ Introduction to Industrial Design and

85.101★ Industrial Design Analysis.

In order to be able to take these courses, students should use the available electives of their First year for this purpose.

Where, in First-year Architecture, electives are not available, students registered in the B.I.D. program may take Industrial Design 85.100★ and 85.101★ in lieu of the courses:

Architecture 76.120★, Theories of Environmental Design 1A; and

Architecture 76.121★, Theories of Environmental Design 1B.

Second Year

Term	Lectures and Tutorials		Laboratory and Studio Projects		Course Weight
	I	II	I	II	
76.203★ Theories of Environmental Design 2A (note a)	3	—	—	—	4
77.200★ Environmental Controls II (note a)	3	—	3	—	6
82.220★ Mechanics of Materials I (note b)	—	3	—	3	6
88.270★ Elements of Materials Engineering (note b)	—	3	—	3	6
85.220 Form and Colour Fundamentals	2	2	4	4	8
85.230★ Visual Communication Theory and Techniques for Industrial Design	—	—	6	—	5
85.231★ Introductory Industrial Design Projects	—	1	—	6	6
Elective (note c)	3	3	—	—	7
Elective (note c)	3	3	—	—	7
Total Course Weight					55
Hours per week	14	15	13	16	

Note a

Students who followed First year of the B.I.D. program in the Engineering stream should take these courses as conversion electives. They may, however, in consultation with their adviser, substitute these courses for other Architecture courses of minimally the same course weight.

Note b

Students who followed First year of the B.I.D. program in the Architecture stream should take these courses as conversion electives. They may, however, in consultation with their adviser, substitute these courses for other Engineering courses of minimally the same course weight.

Note c

It is recommended that students use these electives for fulfilling the prerequisites for Third-year courses in Marketing, Perception, and Anthropometrics and Ergonomics. These prerequisites are Economics 43.100 and Psychology 49.100.

If the course weights of the chosen electives are higher than indicated in the chart, the actual course weights will be counted for the determination of academic standing.

Third Year

Term	Lectures and Tutorials		Laboratory and Studio Projects		Course Weight
	I	II	I	II	
42.208★ Introduction to Marketing (note a)	—	3	—	—	4
49.321★ Perception	—	3	—	—	4
85.310 Mass-Production Technology for Industrial Design	2	2	4	4	8
85.321★ Environmental Communication Workshop	2	—	4	—	5
85.322★ Advanced Studies in Form and Colour	1	—	5	—	5
85.330 Studio Projects Industrial Design I	2	—	10	—	8
85.331 Studio Projects Industrial Design II	—	3	—	10	9
85.360★ Anthropometrics and Ergonomics	2	—	3	—	4
85.361★ Anthropometrics and Ergonomics Workshop	—	2	—	3	4
Elective (note b)	3	3	—	—	7
Total Course Weight					58
Hours per week	12	16	26	17	

Note a

Students in Industrial Design can gain entry into this course by permission of the School. Prerequisites are Accounting 41.100 and Economics 43.100 and either Psychology 49.100 or Sociology 53.100.

Note b

It is recommended that students choose, in consultation with their adviser, an Engineering course as an elective.

If the course weight of the chosen elective is higher than indicated in the chart, the actual course weight will be counted for the determination of academic standing.

Fourth Year

Term	Lectures and Tutorials		Laboratory and Studio Projects		Course Weight
	I	II	I	II	
85.400* Professional Practice in Industrial Design	3	—	—	—	4
85.401* Industrial Design Seminar (note a)	—	3	—	—	4
85.430 Major Industrial Design Project (notes b and c)	2	2	15	15	20
85.431 Minor Industrial Design Project I (note b)	—	—	6	6	7
85.432 Minor Industrial Design Project II (note b)	—	—	6	6	7
85.440* Industrial Practice Internship Field Reports	—	—	—	—	4
85.450 Colloquium Cultural Subjects	3	3	—	—	7
Elective (Industrial Design) (note d)	3	3	—	—	7
Elective (note d)	3	3	—	—	7
Total Course Weight					67
Hours per week	14	14	27	27	

Note a

The Industrial Design Seminar will be concentrated in one week, during the Second term; no other courses can be taken during that week.

Note b

Lecture and tutorial hours for the Industrial Design Projects will not be differentiated in the University timetable. They will be used in the briefing, instruction, and information period of the Projects and be scheduled in accordance with the workplan which each student is required to submit to the Industrial Design Projects Committee of the School before the end of the Second term of Third year.

Note c

Industrial Design 85.430 has a course value equivalent to 2.5 credits.

Note d

Electives must be chosen in consultation with the Industrial Design Projects Committee on the following principles:

(i) The electives chosen should serve to deepen the student's understanding of fields related to Industrial Design or disciplines which are relevant for industrial designers;

(ii) The electives chosen should preferably be advanced courses, for which the student has taken prerequisites in previous years;

(iii) The electives chosen should preferably be related to the Industrial Design Projects and provide basic and/or actual information for these Projects.

If the course weights of the chosen electives are higher than indicated in the chart, the actual course weights will be counted for the determination of academic standing.

Industrial Practice Internship

In order to provide the student with a realistic view of the possibilities and limitations of industry and to establish and maintain good contacts and communication among the School, the students and industry, the student in Industrial Design has to spend a period of time as an intern in industry.

These periods of Industrial Practice Internship are to be taken prior to graduation and to be chosen in an industry that will satisfy the faculty member involved.

Students should find a suitable internship on their own initiative, although the School of Industrial Design offers placement assistance for this purpose. In cases where a suitable industrial internship is not possible, alternate arrangements will be considered.

If the Industrial Practice Internship is not completed in time or if it is not proved successful, the student will not be awarded the Bachelor of Industrial Design degree until the missing internship is completed and proof of satisfactory results is given.

During the Industrial Practice Internship, a study of the relationship between Industrial Design and the technology, production process, or functional issues at hand will be undertaken. A report is to be submitted to the School, to be filed in the technical data facilities of the School and made accessible to other students.

See course Industrial Design 85.440*.

Industrial Design Projects

The Industrial Design Projects in the Second, Third and Fourth years will represent either real or simulated situations to be developed to the stage of drawings, models, full scale mock-ups or simulated finished products, as appropriate.

The design experience in Industrial Design Projects synthesizes and integrates all the other course work and draws on the resources from those courses, including the disciplinary expertise of the staff. It should also attempt to explore and exploit knowledge available on campus and within institutions outside.

Industrial Design Projects, even when they are research-oriented, will only be acknowledged when they are aiming at predetermined goals, which should be of a concrete nature, preferably objects to be made by industry. The subject or theme of the Project will be determined by agreement between the student and the faculty involved.

The usual pattern of activities in the execution of an Industrial Design Project is, in its simplest form, composed of three subsequent phases:

- (a) an analytical informative phase;
- (b) a creative or formative phase;
- (c) a descriptive or communicative phase.

Progress within this pattern of activities is made by feedback and feed-forward with intermediate evaluations. A project will not be considered complete if any of the three major phases has not been passed through, documented and evaluated.

The student will be required to keep a specified record of working hours spent on the Project. This record must be available for inspection, and must be one of the documents submitted at examination.

The School of Industrial Design may conditionally approve an intended collaboration of students in the execution of Industrial Design Projects provided that proper means of evaluation and examination are built into the project to ensure the identification of each student's contribution.

Industrial Design Projects will be examined by the appropriate body after each of the phases and on the planned and agreed deadlines. Students who do not meet the deadlines for submission of project work will be considered to have withdrawn from examination.

It should be noted that supplemental examination privileges will not be granted for Second, Third, and Fourth year Industrial Design Project courses (85.231*, 85.330, 85.331, 85.430, 85.431, 85.432, 85.435* and 85.436*). This regulation implies that students who obtained a grade of less than C- for such a course must repeat the course and attain a grade of C- or better in order to proceed in the program.

The execution of Industrial Design Projects will require professional equipment for sketching, drawing, etc., which will not be provided by the School. A list of recommended equipment is available at the School's administration. The initial costs for the minimum equipment necessary will be approximately \$500, which includes the cost of photographic equipment.

The execution of Industrial Design Projects will require materials for sketching, drawing, reproduction, model making, etc. Moreover, travel costs may be involved. The level of total expenditure will vary considerably with the nature of the theme or subject of the Project. The policy of the School is to see that such costs are only partly borne by the student and that co-operation with industry and institutions outside the University will provide further funds. The student's contribution can be estimated generally in the order of \$250 per year.

Documents, sketches, drawings, models, etc. resulting from Industrial Design Projects must be registered with the administration of the School as the authorized work of the student while studying at the School of Industrial Design of Carleton University.

Resulting documents, sketches, drawings, models, etc. from Industrial Design Projects must be retained by the student for a minimum period of two years after production. During this period the student must have these results available in good condition for the School of Industrial Design for exhibition, display or publication purposes. During this time, the student will be required to advise the Director of the School, well in advance, about any transaction, exhibitions, display or publication, which will involve these results.

Students are not allowed to use the result of Industrial Design Projects for commercial purposes without written permission of the Director of the School of Industrial Design.

Fourth Year Industrial Design Projects

All regulations and arrangements as described under "Industrial Design Projects" apply to the Fourth year Projects, except for Industrial Design 85.435* and 85.436*. Over and above these regulations, Fourth-year Industrial Design Projects are subject to the following:

Fourth-year Industrial Design Projects are conducted, supervised, administered and examined by the Industrial Design Projects Committee, reporting to the Faculty Council of the School.

The subjects or themes of Industrial Design Projects are determined by agreement between the student and the Industrial Design Projects Committee. This agreement should be reached before the end of Second term in the Third year.

Students registering in Fourth year, who have failed to reach an agreement with the Industrial Design Projects Committee before the end of the Third year, are given assignments for Fourth-year Projects by the Committee after registration. Such assignments are binding.

In order to reflect the actual situation of the professional industrial designer, the student is required to undertake more than one project to be executed simultaneously in Fourth year. The student is required to plan the work on the Fourth-year Industrial Design Projects well in advance, in consultation with the Industrial Design Projects Committee.

The proposal for a work plan must be submitted to the Industrial Design Projects Committee for approval before the end of the Second term of Third year.

The specified record of working hours spent on Fourth-year Industrial Design Projects must be available for inspection by the Committee at any time and be among the documents to be submitted at the final examination.

General Information

Course Pattern and Counselling

The program of study in Industrial Design is necessarily structured to meet the requirements in education and training for a professional career in industrial design. The First year's course pattern follows that of either the School of Architecture or the Faculty of Engineering, with adaptations through the elective courses offered. The Second, Third and Fourth years of the School of Industrial Design are structured to build on the material of the First year with minor conversions to suit a program with an identity of its own. The emphasis in Fourth year is on the Industrial Design Projects, the other courses preferably to be considered as supporting sources of knowledge and understanding.

When a student first registers in the School of Industrial Design, he or she is assigned a faculty member of the School, who will act as the student's adviser. The adviser usually counsels the student for the duration of the undergraduate program. This counselling includes program requirements, selection of electives and course and program approvals.

Progress through the program in First year is by means of the systems of the School of Architecture and the Faculty of Engineering as appropriate (pp. 324 and 291). Progress through the program in Second, Third

and Fourth years is by means of the modified credit system as used in the Faculty of Engineering.

For purposes of scheduling, each student is considered as being in a particular year of the program. In order to move from Second to Third or from Third to Fourth year of the program, a student must not be deficient in the Industrial Design Project course(s) and in no more than one of the other courses. This requirement does not relate to a student's academic status, but only to the nominal year designation. However, a student who is taking courses in Fourth year while designated in Third year, has the responsibility for satisfactorily resolving any prerequisite deficiencies and difficulties in the course program.

Course Level

The year level of a course can be read from the course number; for example the course Industrial Design 85.331 is at Third-year level and 85.450 is at Fourth-year level. This indicates the general academic background required and specific prerequisites are also given where appropriate. Students may take courses at a year level higher than their current registration; they are advised, however, to consult the course instructor if they have doubts regarding their background preparation. In some cases, the School may also be able to waive specific prerequisites.

Electives

The School of Industrial Design offers only a few elective courses under its own jurisdiction. It is strongly recommended, however, that students in Industrial Design choose from the wide variety of courses in the humanities, social sciences, engineering or multi-disciplinary courses offered in the University. Industrial Design Projects most often represent complex situations which require background information that often will be better understood when supported by appropriate elective courses in other disciplines.

Qualifying University Year Courses

Qualifying University year courses cannot be used to satisfy any of the elective requirements in any year of the regular course pattern.

Timetables

All undergraduate courses of the School of Industrial Design are normally offered in the Day division only and are scheduled in the timetable of the University.

Carleton Industrial Design Students' Association

CIDSA organizes social and academic events to develop esprit de corps among industrial design students and faculty. The Association also represents students within the School regarding academic and/or policy matters to the University and the profession.

Grading System

Standing in courses will be determined by the School and will be shown by alphabetical grades. The grades used with their corresponding grade points are as follows:

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

Passed Supplemental Examination: 1

Notations to represent special circumstances are as follows:

Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Committee on Student Standing and Promotion of the School of Industrial Design only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

Pass

Pass standing in a supplemental examination: equivalent to 1 grade point.

F

Failure: no academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing: no academic credit.

Abs

Absent from formally scheduled final examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Committee on Student Standing and Promotion of the School of Industrial Design for deferred examination privileges. Such applications must:

1. Be made in writing to the Engineering Faculty Registrar's Office not later than one week after the date of the examination; and
2. Be fully supported in the case of illness by a medical certificate or by appropriate documents in other cases.

Academic Standing, Promotion and Probation

First Year

During the First year, academic standing, promotion and probation of a student registered in the B.I.D. program, is under the jurisdiction of the School of Architecture or of the Faculty of Engineering, whichever is applicable (see p. 301 for Engineering and p. 328 for Architecture).

Promotion to the Second year of the B.I.D. program requires the same academic standing as required for promotion to Second year Architecture or Second year Engineering, for students who were enrolled in the Architecture or Engineering stream respectively.

Second, Third and Fourth Years

The academic standing of each full-time student will be reviewed prior to fall registration. At that time, the student's previous record, including courses from the preceding Summer session and supplemental examination results, will be considered.

A student who, upon review, no longer meets the requirements for satisfactory academic standing, will be placed on academic probation. A student may be on academic probation only once in the Bachelor of Industrial Design program.

A student on probation will be required to repeat any core courses and repeat or replace any elective courses from the previous year's registration which are below a C- level.

A student on probation who fails to meet the conditions will lose undergraduate status and will be ineligible for future registration in the B.I.D. program.

To achieve satisfactory academic standing, the student must:

1. Meet the weighted grade-point average required for the year of study just completed;
2. Meet the weighted cumulative grade-point average required for all courses taken as part of the Bachelor of Industrial Design program;

The required weighted cumulative grade-point average and the weighted grade-point average for the year are:

- 2.8 after two years of study;
- 3.1 after three years of study;
- 3.4 after four years of study.

A year of study, as used here, refers to the student's period of study and not to the program year defined in the previous section of these regulations. Calculation of the weighted average is based on all the courses in which the student was registered during the year being completed, plus the courses of previous years. The most recent grade obtained in each course will be used to compute the grade-point average.

3. Not receive a grade of F, FNS or Abs in the year of study just completed in more courses than the allowable numbers listed below:

Number of Full Course Equivalents Taken	Maximum Number of Full Course Equivalent F, FNS or Abs Allowed
0.5 — 1.0	0
1.5 — 2.5	0.5
3.0 — 4.0	1.0
4.5 — 5.5	1.5
6.0 or more	2.0

4. Achieve a grade point of 4.0 (C-) or better in each of the Industrial Design Project courses.

Students with Advanced Standing

Students admitted with advanced standing must obtain an average appropriate to their level of admission but only those courses taken at Carleton University will be included in the evaluation.

Graduation

In order to fulfill the minimum graduation requirements for the degree of Bachelor of Industrial Design, a candidate must have met all the course requirements of the First to Fourth years, inclusive, with an over-all weighted grade-point average of at least 3.4. In addition, the candidate must have achieved a grade point of 4.0 or better in each of the Industrial Design Project courses and be recommended by the School of Industrial Design.

Degrees with Distinction

Upon recommendation of the School of Industrial Design, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To receive this recommendation, the candidate is expected to obtain a weighted grade-point average of at least 9.0 in the course requirements of the final year and, in addition, a weighted grade-point average of at least 7.8 in the course requirements of the First to Fourth years, inclusive.

Upon recommendation of the School of Industrial Design, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To receive this recommendation, the candidate is expected to obtain a weighted grade-point average of at least 7.8 in the course requirements of the final year and, in addition, a weighted grade-point average of at least 6.6 in the course requirements of the First to Fourth years, inclusive.

Courses Offered

Industrial Design 85.100*

Introduction to Industrial Design

An overview of the theoretical background of the phenomenon Industrial Design, consisting of such topics as: the definitions and dimensions of design and industrial design, its nature and its historical evolution; the notion of quality; quality aspects in man-made objects; formal qualities as determinants for categories of design; design methods; design management in industry; professional practice of industrial design and industrial design promotion, nationally and internationally. Practising industrial designers are invited to present case studies of their activities. (Also listed as Architecture 76.206*.)

Day division, First term: Lectures and discussions three hours a week. (Course weight 4.)

Industrial Design 85.101*

Industrial Design Analysis

The various problems involved in industrial design are analysed. Among others: The relationship with principle techniques and mass-production technology; problems of uniformity and variety, specialty and versatility in production; problems of tolerances; the role of ergonomics and anthropometrics in design; industrial design and environment; speculations about future industrial design approaches with regard to pollution and conservation of resources; adaptation of value-analyses to the field of industrial design. (Also listed as Architecture 76.211*.)

Prerequisite: Industrial Design 85.100* (Architecture 76.206*.)

Day division, Second term: Lectures and discussions three hours a week. (Course weight 4.)

Industrial Design 85.220

Form and Colour Fundamentals

The objective of the course is to encourage the student to approach the phenomena of form and colour systematically. Known systems of form determination and colour identification are evaluated. Properties of structural elements of form and their interactions in ranges, proportions, static and dynamic symmetries in two and three dimensional compositions are studied. Form and colour in nature are compared with form and colour in man-made environments. Further topics of the course are the appearance of form and colour under various conditions and in various positions, the expression of form and colour, typology of objects, form organization and form description and colour specification.

Day division: Lectures and tutorials two hours a week, laboratory four hours a week. (Course weight 8.)

Industrial Design 85.230*

Visual Communication Theory and Techniques for Industrial Design

An introduction to the theory and basic techniques of mechanical drawing and sketching as an aid to design

projection, auxiliary, oblique and isometric views. Introductory material is also presented in basic sketching, ideation and visualization, together with presentation techniques.

Day division, First term: Tutorials and laboratory six hours a week. (Course weight 5.)

Industrial Design 85.231*

Introductory Industrial Design Projects

The introductory industrial design projects deal with product development theories in connection with case studies. The laboratory work of this course gives the student an opportunity to apply the experience of Industrial Design 85.230* in a real product design situation, where an existing product is analysed and proposals for improvement and innovation are produced. The emphasis is on the application of visual communication techniques in design.

Prerequisite: Industrial Design 85.230*.

Day division, Second term: Lectures and tutorials one hour a week, laboratory six hours a week. (Course weight 6.)

Industrial Design 85.310

Mass-Production Technology

This course attempts to generalize the transformation techniques for all operational materials in modern industry. The course presents a survey of the various techniques applied to material in its liquified, plastified or solid state of aggregation, such as casting, injection molding, extruding, forging, vacuum forming, deep-drawing, stamping, folding, cutting, machining, sintering, joining, laminating and finishing operations. The techniques are merited in terms of economics and accuracy. The role of templates and molds is emphasized and properties and limitations of molds are studied. Prerequisite: Third-year registration.

Day division: Lectures and tutorials two hours a week, laboratory four hours a week. (Course weight 8.)

Industrial Design 85.312*

Graphics Technology and Design

Survey of techniques and processes used in the printing and blockmaking industry and the relationship of these processes to graphic design. Typeface design and the development of type and families of typeface from historical sources. Typeface as exponents of cultural trends. Basics underlying typography and layout in graphic design. Minor graphic design projects are executed in connection with the lectures.

Prerequisite: Third-year registration.

Evening division, First term: Lectures and tutorials three hours a week, laboratory three hours a week. (Course weight 4.)

Industrial Design 85.313*

Package Engineering and Design

Survey of processes and materials used in the packaging industry. Principles of package engineering and design for the transportation and distribution of mass-produced products. Packaging design as inte-

grated in marketing processes; product and brand identification; corporate identity through package design. Minor packaging design projects are executed in connection with the lectures.

Prerequisite: Third-year registration and Industrial Design 85.312*.

Day division, Second term: Lectures and tutorials three hours a week, laboratory three hours a week. (Course weight 4.)

Industrial Design 85.321*

Environmental Communication Workshop

It is recognized that the objects of our environment, besides serving their primary usage, are most often used as a medium to communicate man's personal or collective ideas. The design of objects and environments can, to a great extent, be seen in this context and this course is intended to explain the major mechanics of communication in general and of communication by means of objects in particular. Analyses of objects and environments with respect to communicative functions are undertaken and experiments are conducted.

Prerequisite: Third-year registration.

Day division, First or Second term: Lectures two hours a week, laboratory four hours a week. (Course weight 5.)

Industrial Design 85.322*

Advanced Studies in Form and Colour

Students may continue the research and study encountered in Industrial Design 85.220 by doing advanced research in some specific area of the phenomena of form and/or colour. Directed study.

Prerequisite: Industrial Design 85.220 or permission of the School.

Day division, First or Second term: Lectures one hour a week, laboratory five hours a week. (Course weight 5.)

Industrial Design 85.330

Studio Projects Industrial Design I

The Industrial Design Projects to be accomplished are of a simple nature, based on a given briefing and program of requirements. The emphasis is on the creative and executive phases of the design process. Prerequisite: Engineering 88.100 or Industrial Design 85.230* or permission of the School.

Day division, First term: Lectures and tutorials two hours a week, laboratory ten hours a week. (Course weight 8.)

Industrial Design 85.331

Studio Projects Industrial Design II

Industrial Design Projects II are of a more complex nature and may be accomplished with experts from other disciplines. These projects begin with an extensive period of orientation on the given problem areas from which the program of requirements is derived, which present the criteria for further creative and executive work. The choice of design assignments is made with the consent of the students involved. It is considered to be important that the student is doing a

complete job, including the accomplishment of all the sketchwork, the making of preliminary models, product drawings and modelling.

Prerequisite: Industrial Design 85.330.

Day division, Second term: Lectures and tutorials three hours a week, laboratory ten hours a week. (Course weight 9.)

Industrial Design 85.360*

Anthropometrics and Ergonomics

Concepts of human engineering, anthropometrics and ergonomics are studied, researched and experimentally applied. Special emphasis is given to limits of human performance, visual and tactile displays, man-machine and man-environment interface, measurement, etc.

Day division, First term: Lectures and discussion two hours a week, laboratory three hours a week. (Course weight 4.)

Industrial Design 85.361*

Anthropometrics and Ergonomics Workshop

Laboratory work and experimentation in anthropometric and ergonomic factors as they affect industrial design.

Day division, Second term: Lectures and discussion two hours a week, laboratory three hours a week. (Course weight 4.)

Industrial Design 85.400*

Professional Practice in Industrial Design

The course surveys how industrial designers practise as independent consultants, and how they are employed in industry. The organizational aspects of independent offices of industrial design, their responsibilities towards their clients and their ways of operation are compared with the role of industrial design and the organizational aspects of the profession within the framework of industrial management. Topics include the form of contracts for industrial design consultancy, ways of determination of fees, legal implications of the profession including those of patents and copyrights. The course also deals with the organization of the profession on a national and an international basis. Representative industrial designers are invited to give their views on professionalism and to present case histories of their operations.

Prerequisite: Industrial Design 85.100* (Architecture 76.206*).

Day division, First term: Lectures and discussion three hours a week. (Course weight 4.)

Industrial Design 85.401*

Industrial Design Seminar

Each year a special topic is chosen to be elaborated on and discussed. The topics deal with problems in the relationship of Industrial Design to other disciplines. Experts in other disciplines are invited to participate in and contribute to the seminar. Students are required to submit and defend a thesis, based on their participation in the seminar, at the time of presentation of the

Fourth-year Industrial Design Projects.

Prerequisite: Registration in Fourth-year Industrial Design Projects. (Course weight 4.)

Industrial Design 85.420*

Form Organization

Form organization attempts to design, define and prescribe solids of monolithic nature by means of an abstract system which can be used for instructional purposes to make and verify materialized approximations of such solids. A three-dimensional locus is an example of such a system; other systems are based on controlled growth patterns, geometric generation, typological generation, etc. The course intends to describe variations of such systems, which the students are required to apply in laboratory exercises.

Prerequisite: Engineering 88.100 or Industrial Design 85.230* or Industrial Design 85.220 or permission of the School.

Day division, First or Second term: Lectures, tutorials and laboratory six hours a week. (Course weight 4.)

Industrial Design 85.430

Major Industrial Design Project

The major Fourth-year Industrial Design Projects should represent a theme from which one or more problem areas can be derived or narrowed down. The problem areas chosen should preferably be product-oriented and be of sufficient complexity. Preferably, the assignment should be undertaken in co-operation with off-campus organizations, industry, etc., to increase the realism of the approach, at the same time introducing the student to practice and placement. Depending on the nature of the assignment, the results of the design work in these major projects may deviate from the usual accomplishments of the executive phase of the process, but they should bear evidence of the student's involvement and thorough approach. See also: Industrial Design Projects, and Fourth-year Industrial Design Projects (p. 344).

Prerequisite: Industrial Design 85.331 or permission of the School.

Day division: Lectures and tutorials two hours a week, laboratory fifteen hours a week. (Course weight 20. Course value equivalent to 2.5 credits.)

Industrial Design 85.431

Minor Industrial Design Project I

The Minor Industrial Design Projects mainly serve to enable students to demonstrate their versatility. The choice of the minor projects, therefore, must be in balance with the major project. Although preferred, it is not strictly required that the minor projects be product-design oriented, nor need they be derived from actual utilization-problem areas. They could represent research in complementary design fields, such as communication, graphic design or design experiments. Although the minor design projects may be of a less complex nature than the major project, they should always conform to academic standards of

quality and be handled in the same systematic way and with the same thoroughness as the major project. See also: Industrial Design Projects, Fourth-year Industrial Design Projects (p. 344).

Prerequisite: Industrial Design 85.331 or permission of the School.

Day division: Laboratory six hours a week. (Course weight 7.)

Industrial Design 85.432

Minor Industrial Design Project II

See Industrial Design 85.431.

Prerequisite: Industrial Design 85.331 or permission of the School.

Day division: Laboratory six hours a week. (Course weight 7.)

Industrial Design 85.435* and 85.436*

Special Industrial Design Studies

Special Industrial Design Studies are based on specific projects and may be conducted by faculty members who are specialists in a particular field of design. The regulations for Fourth-year Industrial Design Projects (p. 344) do not apply to these studies, which are entirely under the supervision of the instructor.

Prerequisite: Third- or Fourth-year registration or permission of the School.

Day division, First and Second term: Lectures, tutorials and laboratory six hours a week. (Course weight for each course 4.)

Industrial Design 85.440*

Industrial Practice Internship Field Reports

During the periods of internship in industry, or in alternative internships approved by the School, the student is required to study technological phenomena in their relationship to Industrial Design. At the end of each period, a field report, describing such phenomena and relationships, must be submitted to the School for evaluation and marking. The quality and quantity of the field reports must minimally reflect a period of internship study of sixteen weeks. Copies of field reports will be filed in the School to be accessible to other students. (Course weight 4.)

Industrial Design 85.450

Colloquium Cultural Subjects

This colloquium is seen as an opportunity to introduce various cultural subjects by experts from these fields. The perspective of the colloquium is anthropological and the objective is to give the students a sense of context and relevance of industrial design as an integral part of our culture.

Prerequisite: Industrial Design 85.100* (Architecture 76.206*).

Day division: Lectures and tutorials three hours a week. (Course weight 7.)

Arts and Social Sciences

Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of man and his attempts to understand himself and the world about him.

Prerequisite: First-year standing or higher.

Not offered 1980-81.

Humanities 10.200*

An examination of selected works illustrating various dominant views on the nature of man and his attempts to understand himself and the world about him in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1980-81.

Interdisciplinary 04.288

Introduction to Women's Studies

A survey course, designed to increase the student's understanding of the position of women in contemporary society. Instructors from a variety of disciplines offer an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society.

Evening division: Lectures three hours a week.

Interdisciplinary 04.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature as the paramount expression of the writer's concern with *la condition humaine*. Such themes as alienation, dread, subjectivity, freedom, authenticity, and death are explored in selected works by major authors, including Hölderlin, Leopardi, Kierkegaard, Dostoevsky, Nietzsche, Tolstoy, Rilke, Kafka, Conrad, Hesse, Ionesco, Beckett, Sartre and Camus. Attention is also given to the philosophic basis and literary antecedents of the existentialist posture. (Also listed as English 18.390.) All assigned readings will be in English.

Prerequisite: Permission of the Department.

Day division: Lectures and discussions three hours a week.

S.C. Russell

Science

Science 60.100

Man in His Environment

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. Included is a general description of the aims and methods of experimental science with an emphasis on environmental and ecological problems. The historical aspects of scientific discoveries are examined, particularly those that are influencing present society. Particular attention is directed to the interactions of science and society and to man's influence and impact on the natural environment. In a framework of the natural sciences, emphasis is on the limits of the natural systems in which man is a member.

Day division: Lectures three hours a week.

H.H.J. Nesbitt

Science 60.200*

Introduction to Scientific Computing

Also listed as Computer Science 95.103*. See p. 60.

Science 60.202*

Introduction to Computers

Also listed as Computer Science 95.102*. See p. 60.

Science 60.206*

Introduction to Data Processing

Also listed as Computer Science 95.104*. See p. 60.

Interdisciplinary Science 00.200

Physical Anthropology (Introduction to the Study of Prehistoric Man)

A course for undergraduates desirous of learning something of what science has to say concerning the history of man. No previous formal training in biology is necessary. Definition and divisions of anthropology; physical anthropology; history, prehistory, and the nature of an historical document; historical introduction to human paleontology; geological time; absolute, relative and conjectural chronology; the evolution of exact chronology; modern techniques. The biological definition of man; relevant comparative anatomy of modern man, the modern anthropoid, and known fossil man. The Australopithecus problem. The Pithecanthropus-Sinanthropus-Atlanthropus group. Heidelberg, Neanderthal, and Cro-Magnon man. The Palestine Group. The relevance of the theory of evolution in the comparative anatomy of these groups. The Teilhard de Chardin synthesis. Pre-historic sites; their occurrence, study and interpretation. Artifacts of fossil man, their nature, classification, and chronology. Prehistoric painting and sculpture. In lieu of essays and term papers students are required to submit a review of each of sixteen texts chosen from the list below. An announcement concerning (a) the spacing of the

reviews and, (b) which of them are compulsory, will be made in class. This course is available as an option to Second- and Third-year students only. For students registered in the Faculty of Science, available only as a free option.

Texts: Leakey, *Adam's Ancestors*; Brace, *The Stages of Human Evolution*; Ardrey, *African Genesis*; LeGros Clark, *Antecedents of Man*; *History of the Primates*; Kroeber, *Anthropology*; *Biology and Race*; Wendt, *In Search of Adam*; Oakley, *Man the Toolmaker*; Burkitt, *Old Stone Age*; Darwin, *Origin of Species*; McKern, editor, *Readings in Physical Anthropology*; Teilhard de Chardin, *The Phenomenon of Man*; Dart, *Adventures with the Missing Link*; Howells, *Evolution of the Genus Homo*; Braidwood, *Prehistoric Men*; Pfeiffer, *The Emergence of Man*; Pilbeam, *The Evolution of Man*; *The Ascent of Man*; Napier, *The Roots of Mankind*; Van-Lawick Goodall, *In the Shadow of Man*; Brothwell, *Digging up Bones*; Heizer, *Man's Discovery of His Past*; Vance Goodall, editor, *The Quest for Man*.

See also Biology 61.391*.

Technology, Society, Environment Studies

Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by two courses intended for Third-year students and organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, and the consumer society concept, and through team projects which bring together students working in different disciplines. The two courses are T.S.E. 59.301, Technology-Society Interaction; and T.S.E. 59.302, Interaction of Technological Society with the Natural Environment and its Resources. They are described on pp. 433-434.

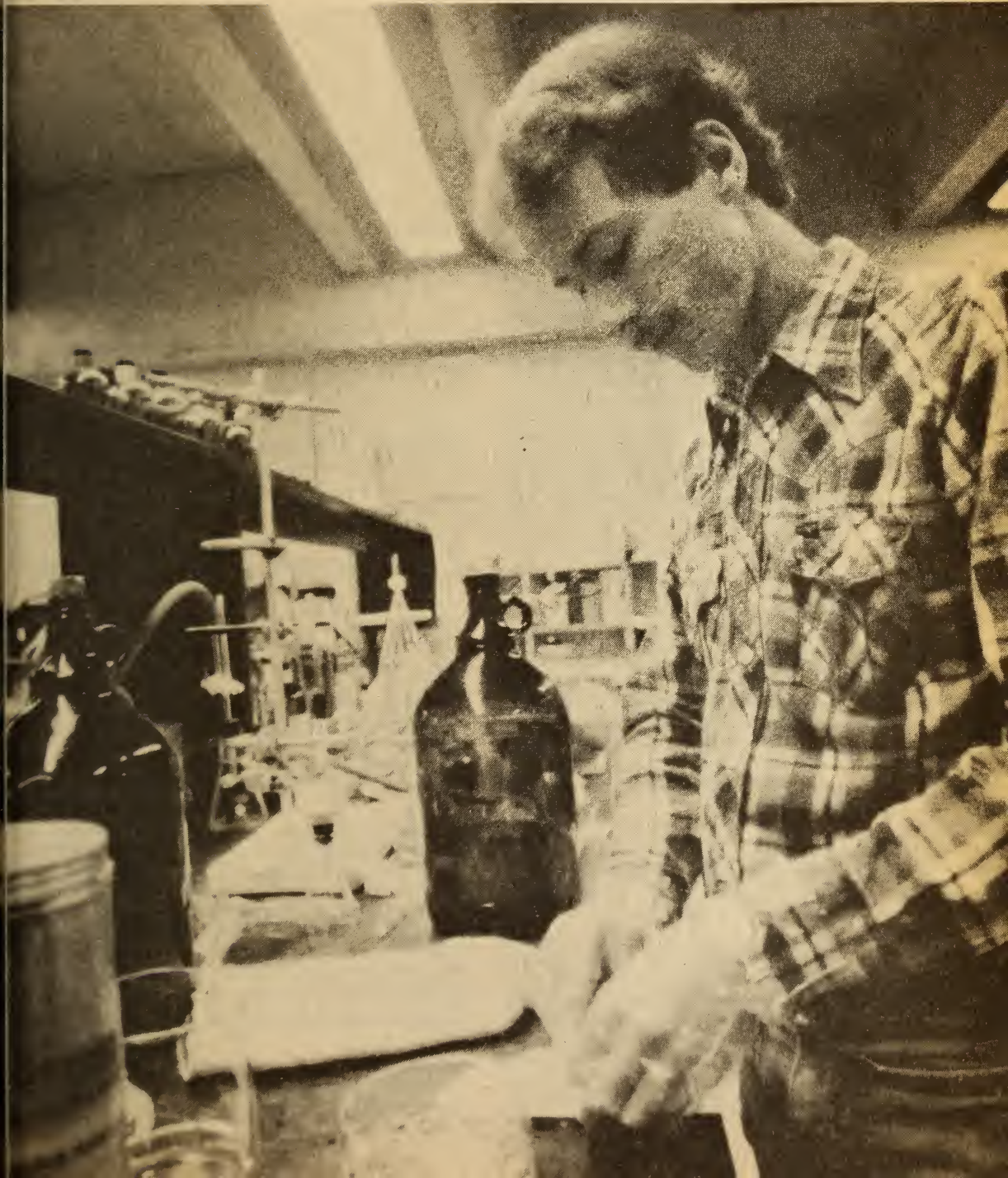
Other Courses

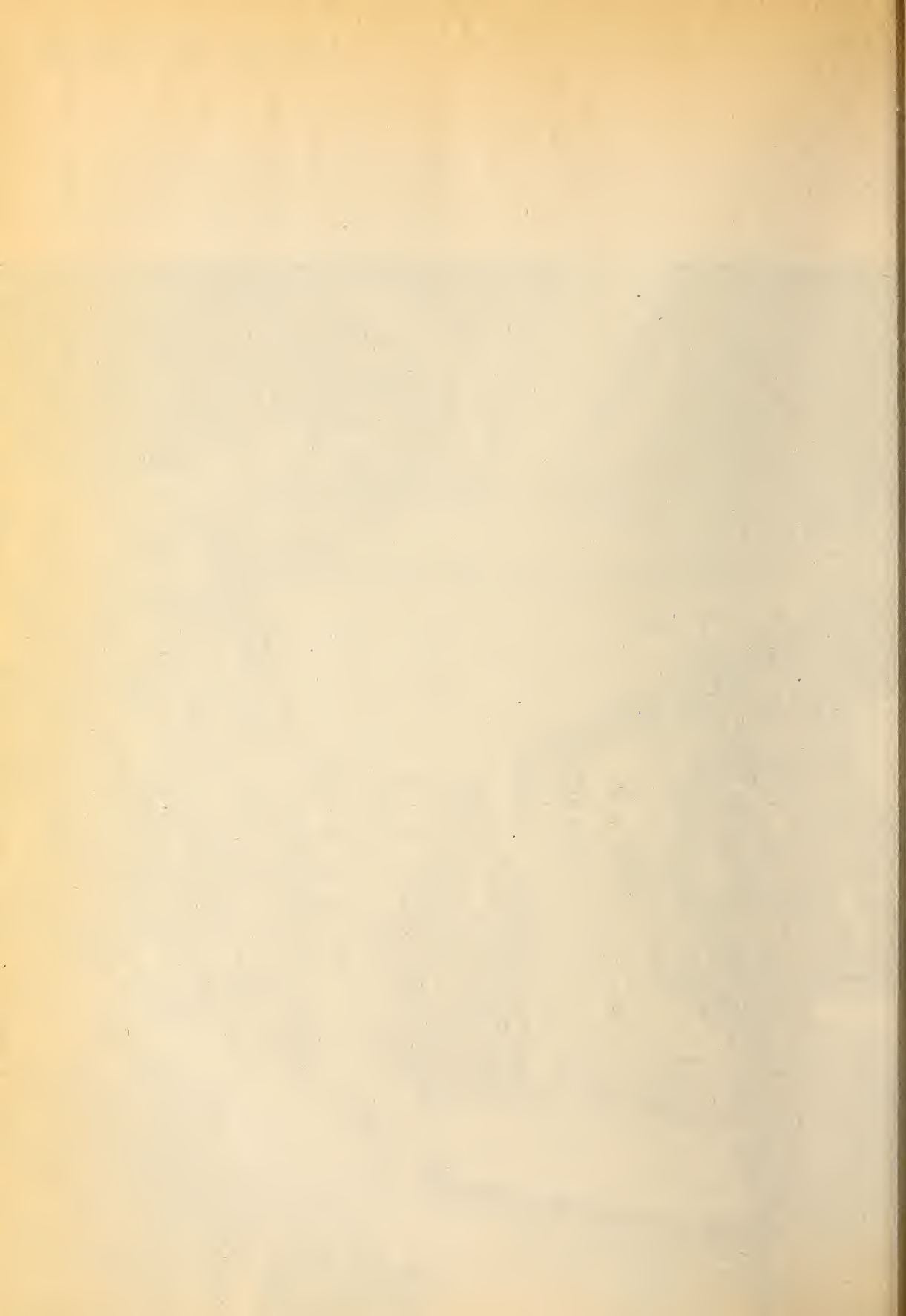
African Studies, see p. 428.

Asian Studies, see p. 429.

Urban Studies, see p. 435.

Women's Studies, see p. 436.





Officers of the Faculty

Dean

G.B. Skippen

Secretary of the Faculty

P.M. Laughton

Departmental Chairmen

Biology, H.G. Merriam

Chemistry, D.R. Wiles

Geology, To be announced

Mathematics and Statistics, K.S. Williams

Physics, M.K. Sundaresan

Director of the Institute of Biochemistry J.M. Neelin

Chairman of the Integrated Science Studies Committee

D. Kessler

Chairmen of Interdepartmental Committees

Biology and Geology, H.F. Howden

Chemistry and Geology, C.L. Chakrabarti

Geology and Physics, T.J.S. Cole

Mathematics and Physics, J.E. Hardy

Chairman of the Committee on Admission and Studies

K.W. Joy

Faculty Registrar

B.R. Lifeso

Administrative Officer of the Science Workshops

A.A. Raffler

General Information

The Faculty of Science includes the departments of Biology, Chemistry, Geology, Mathematics and Statistics and Physics and provides course programs leading to the degrees of Bachelor of Science, Bachelor of Science in Integrated Science Studies and Bachelor of Science with Honours.

The Science degree program is designed to provide specialization in one field of study called the Major field while permitting the candidate to select other courses from complementary fields or disciplines in which he or she has a particular interest. The Major fields include Biology, Chemistry, Geology, Integrated Science Studies, Mathematical Sciences, Mathematics and Physics, and the corresponding programs are detailed in the departmental sections of the calendar.

For information about the Integrated Science Studies degree program see p. 390.

The Science degree program with Honours is designed for those students who wish to deepen and extend their studies in one particular field or area for the purpose of preparing themselves for graduate studies, or for

entrance to the Specialist's Certificate of the Ontario College of Education or other fields of scientific endeavour. Honours may be taken in Biochemistry, Biology, Chemistry, Geology, Integrated Science Studies, Mathematical Sciences, Mathematics, Operations Research, Physical Geography, Physics and Psychology. Combined Honours may be taken in Biology and Geology, Chemistry and Geology, Mathematical Sciences and Computer Science, Geology and Physics, Mathematics and Physics, and in Physics and Computer Science. The detailed programs are given in the appropriate departmental sections of the calendar. The Honours program of each student is under the direct supervision of an Honours adviser of the student's department.

Accelerated Progress

Any students registered in Qualifying University year who successfully complete two years or ten courses at the University with a B- or 70% average may have their programs assessed for the purpose of reducing the number of courses required to graduate. This reduction may be made for any student registered in the Faculty of Science who satisfies the promotion requirements for First-year Science within one academic year after admission to Qualifying University year Science with a grade-point average of not less than 7.0 (B-) over courses taken and the recommendation of a Major department or interdepartmental program committee.

Admission Requirements

Qualifying University Year in Science

The Ontario Secondary School Graduation Diploma. A 70% average must be presented on a minimum of 10 Advanced or Enriched Phase credits at Levels 3 and 4, including an appropriate preparation in Chemistry, Physics and Level 4 Mathematics.

Bachelor of Science, Major Program

First Year

1. The successful completion of five courses approved for a Qualifying University year Science program with an average of C- or better in the courses in Mathematics and at least two experimental Sciences; or

2. The Ontario Secondary School Honour Graduation Diploma with a minimum 60% average and including Functions, Calculus and two experimental Sciences. Prospective students should note that, while only a 60% general average is required for admission, they should have at least 60% or third class honours in the mathematics and science subjects offered. Applicants from outside the province of Ontario must present acceptable equivalent certificates generally required for admission to universities in their own provinces or countries.

Advanced Standing

1. To be admitted to Second year a student must have completed the equivalent of the First year Science program with the required academic standing.
2. Applications for admission to the Third or subsequent years will be evaluated on their merits and advanced standing granted for studies undertaken elsewhere when these are recognized as the equivalent of subjects offered at Carleton University. Work taken in the Faculty of Engineering may be counted toward a degree in Science should the student wish to transfer from the Faculty of Engineering at the end of the First or Second year.
3. Students not admitted to a degree program but taking courses at Carleton University as special students may, on transfer to a Science degree program, receive credits for not more than seven courses, four of which must meet the First-year promotion requirements.

Bachelor of Science Honours Program

1. (a) A new student desiring admission to Honours in Science should so indicate on the application for admission to undergraduate studies. The student may indicate the Honours program desired, in which case the application will be forwarded by the Registrar to the appropriate department or committee for approval. A student who does not wish to indicate the particular program may be admitted to First year Honours Science. Any such student must elect a particular Honours program before entering Second year. (b) An "in course" student wishing to enter an Honours program must apply to the chairman of the appropriate department or committee.
2. For entry to the First year of an Honours program a student must have an average of 65% or better in the subjects of Grade 13, as listed under the admission requirements for the Major program, or have a grade-point average of 4.0 or better in the courses of Qualifying University year and the recommendation of the Honours department or committee. Students presenting credits for one or more repeated subjects or courses may not be admitted directly into an Honours program except on the recommendation of the department or committee concerned.
3. For entry to an Honours program after the completion of First year, a student must have a grade-point average of 6.0 or better in the Honours subject(s), an overall grade-point average of 4.0 or better and the recommendation of the Honours department or committee.
4. For continuance in an Honours program the student must maintain a grade-point average of 6.0 or better in the Honours subject(s), an overall grade-point average of 4.0 or better and be recommended by the Honours department or committee. At the beginning of his or her last five courses the student must have (a) a grade-point average of 6.0 or better in the Honours courses (b) an overall grade-point average of 4.0 or better

(c) a grade of C- or better in at least half of the courses to be credited toward his or her degree (d) the recommendation of his or her Honours department or committee. Otherwise the student may not remain in Honours.

5. Students applying for admission to Honours in Science at Carleton after having obtained a degree from Carleton or another university shall meet the same criteria as specified in 2 to 4.

6. No student may be admitted to Honours in Science without satisfying the requirements for entry to the corresponding Major program.

7. While the consent of the department or committee concerned is necessary for entry to an Honours program, the department cannot establish a standard of entrance based on a grade-point average which is higher than that established by the Faculty as set out in the foregoing paragraphs. Students who consider that they meet the requirements for entry to an Honours program but who have not been accepted by any department may appeal to the Science Committee on Admission and Studies for review of the case. The Committee will report to the Science Faculty Board on all such appeals. It should be noted, however, that departmental capacities to accept all qualified Honours candidates may be limited by physical resources.

8. Students in the final year of a Major degree program wishing to be considered for entry to an Honours program must apply to the Major department to have their names withdrawn from the graduation list before March 1 of that year. If subsequently the student is not accepted for an Honours program, the student's name will be returned to the graduation list.

Course Requirements

Qualifying University Year in Science

A Qualifying University year is offered which is the equivalent of Ontario Grade 13 (Senior Matriculation). The program consists of the following five courses:

1. Mathematics 69.006* and 69.007*;
2. Two courses selected from Chemistry 65.010, Physics 75.010, Biology 61.101, Geology 67.100;
3. Two other courses selected from any of the foregoing subjects not already presented and from other courses approved for a Qualifying University year Science program as follows:
Science: Biology 61.101, Chemistry 65.010, Geology 67.100, Physics 75.010.
Arts or Social Sciences: Any Arts or Social Sciences course approved for First-year Science students for which the student has the required prerequisite.

Note:

Normally a student admitted to degree studies in the Faculty of Science with deficiencies in meeting the admission requirements for First year (see p. 355) will

be subject to the promotion regulations governing Qualifying University year students. (See p. 355). However, students whose selection of courses satisfies the requirements of the First year Science program (see below), may be subject to the promotion regulations governing First year students.

First Year

The First year program leading to the degree of Bachelor of Science consists of five courses approved for a First year Science program including (a) Mathematics (b) two experimental Science courses chosen from two different Departments of Biology, Chemistry, Geology or Physics (c) two additional courses chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except 95.101*) or Engineering.

Students who have declared a Major or Honours in a Mathematics program in their First year may replace one of the experimental sciences under (b) by a credit in Computer Science (except 95.101*).

In establishing their First-year program of courses, students should consult with the chairman of their Major department, the chairman of the Integrated Science Studies Committee, or the chairman of the appropriate interdepartmental committee. Students who have not yet selected a Major field should select those First year courses which will give them a wide choice of fields for the Second year. Dependent on the field, the five courses of First year should include the following:

1. *Biochemistry*: Biology 61.100 or 61.101, Chemistry 65.100, Mathematics 69.107* and 69.117*, Physics 75.100.

2. *Biology*: Biology 61.100 or 61.101, Chemistry 65.100, Mathematics 69.107* and 69.117*, or 69.127*, or Mathematics 69.102 and 69.112;

3. *Chemistry*: Chemistry 65.100, Physics 75.100, and either (a) Mathematics 69.107* and 69.117*, and one of Biology 61.100 or 61.101 or Geology 67.100 or (b) Mathematics 69.102 and 69.112;

4. *Geology*: Chemistry 65.100, Geology 67.100, Mathematics 69.107* and 69.117* or 69.127*, and one of Biology 61.100 or 61.101, Physics 75.100 or 75.105;

5. *Mathematics*: Mathematics 69.102 and 69.112;

6. *Physics*: Physics 75.100, Chemistry 65.100, Mathematics 69.107* and 69.117*, or Mathematics 69.102 and 69.112. If Mathematics 69.107* and 69.117* are taken, one of Biology 61.100 or 61.101, or Geology 67.100 is also required;

7. *Physical Geography*: Mathematics 69.107* and 69.117*, Chemistry 65.100, Geology 67.100, and one of Biology 61.100 or 61.101, Physics 75.100, or two of Geography 45.210*, 45.211*, 45.212*. An Arts or Social Science elective (may not be Geography 45.101 if two of Geography 45.210*, 45.211*, 45.212* are selected in above);

8. *Psychology*: Mathematics 69.107*, and 69.117* or 69.127*, and two of Biology 61.100 or 61.101, Chemistry 65.100, Physics 75.100 or 75.105. Psychology 49.100 should be taken as the Social Science elective.

Courses Approved for A First Year Science Program

Science Courses

Biology

- 61.100 Current Concepts in Biology (see "Notes on Programs" p. 367)
- 61.101 Introductory Biology; or if one of these courses has been completed in Qualifying University year, one credit from:
 - 61.201* Animals — Form and Function
 - 61.202* Plants — Form and Function
 - 61.215 Genetics
 - 61.220* Cell Physiology
 - 61.261* Introduction to Ecology

Chemistry

- 65.010 Introductory Chemistry
- 65.100 General Chemistry, or if this course has been completed prior to First year, with permission:
- 65.210 Introductory Physical Chemistry
- 65.220 Elementary Organic Chemistry
- 65.222 Introductory Organic Chemistry
- 65.250 Elementary Inorganic and Analytical Chemistry

Geography

- 45.210* The Physical Environment
- 45.211* Geomorphology and Environmental Management
- 45.212* The Value of Weather

Geology

- 67.100 General Geology
- 67.103* Principles of Geology
- 67.111* Geology, the Environment and Man I
- 67.112* Geology, the Environment and Man II
 - If one full course equivalent from Geology 67.100, 67.111*, and 67.112* has been completed in Qualifying University year, two of:
- 67.221* Crystallography and Optical Mineralogy
- 67.222* Mineralogy
- 67.228* Petrology I
- 67.233* Stratigraphy I
- 67.234* Palaeontology I
- 67.281* Field Geology I

Mathematics

- 69.106* Pre-Calculus Mathematics
- 69.107* Elementary Calculus
- 69.117* Elementary Algebra
- 69.127* Topics in Calculus and Algebra
- 69.102 Calculus
- 69.112 Algebra

- 69.207* Elementary Calculus II
 69.217* Linear Algebra
 69.257* Introduction to Statistics
 or any Mathematics course for which the student has the prerequisite.

Physics

- 75.010 Pre-University Physics
 75.100 Introductory Physics
 75.105 Introductory Physics for Non-Majors; or if one of 75.100 or 75.105 has been completed prior to First year, with permission, any two of:
 75.211* Mechanics and Properties of Matter
 75.222* Wave Motion and Optics
 75.235* Electricity and Magnetism
 75.236* Physics of Electrical and Electronic Measurements

Arts and Social Science Courses

Any course available to a First-year Arts or Social Science student with the exception of (a) Accounting 41.100, 41.101*, or 41.102* (b) Geography 45.210* (c) any Computer Science courses and (d) any course offered by the departments in the Faculty of Science. Advanced courses in certain disciplines may be included if the prerequisite has been completed prior to First year.

Courses for Subsequent Years

Major Program

Candidates will ordinarily take at least ten courses beyond the completion of First year (a) at least four more courses in the Major subject (b) at least two Science courses above the First-year level in a department or departments other than the Major department (c) sufficient electives to meet the program requirement of two Arts or Social Science electives and one free option.

The program of each student is under the direct supervision of a full-time member of the department in which the student takes his or her Major. In several departments most of the more advanced courses will be given, in whole or in part, during the day only. Candidates are advised to consult their Major departments as early as possible to arrange their programs.

Candidates wishing to change their Major field of study may do so only with the approval of both departments concerned.

Integrated Science Studies Program

For course requirements see p. 390.

Honours Program

Students for a degree with Honours will ordinarily take at least 15 courses beyond the completion of First year. (See note p. 32 regarding transfers to the Faculty of

Science from other institutions or faculties.) With the permission of the department or committee concerned, it is possible for a candidate of exceptional ability to complete an Honours program in certain fields in three years from Senior Matriculation by taking six courses in each Winter session and one in each of the Summers.

The course patterns for each Honours program are detailed individually and requirements lie within the discretion of the appropriate department or committee. The student should therefore read the appropriate calendar instructions and consult the chairman of the appropriate department or committee. Capacities for Honours students will depend on departmental resources and the nature of the program.

Regulations governing honours essays, theses or special projects are detailed in the departmental sections of this calendar.

A student who fails to maintain Honours standing may not remain in Honours, and must discuss a new program with the Chairman of the department.

Science Continuation Courses

1. All courses offered in the Science Faculty beyond First year except Geology 67.202* and Geology 67.204*.

2. All courses offered in Computer Science except 95.101*. Students in the Faculty of Science taking Computer Science 95.102*, 95.103* or 95.104* should register for these courses under the following course numbers: 95.102* as 60.202*, 95.103* as 60.200*, and 95.104* as 60.206*.

Technology, Society, Environment (TSE) 59.301, 59.302, 59.401*. (Biology Major and Honours students may use these courses only as free options.)

Geography 45.201*, 45.210*, 45.211*, 45.212*, 45.299*, 45.303*, 45.308, 45.312, 45.325, 45.345*, 45.346*, 45.402*, 45.411*, 45.412*, 45.414*, 45.415*, 45.417*, 45.418*, 45.424*.

Psychology 49.200*, 49.201*, 49.204*, 49.205*, 49.220*, 49.221*, 49.222*, 49.251*, 49.252*, 49.255*, 49.256*, 49.270*, 49.271*, 49.305, 49.321*, 49.325, 49.327*, 49.330*, 49.331*, 49.355*, 49.356*, 49.375*, 49.376*, 49.380*.

3. All courses offered in the Bachelor of Engineering program beyond First year, subject to the approval of the Faculty of Engineering.

Notes:

1. Computer Science 95.101* is not acceptable for credit in the Science Faculty.

2. The following courses are acceptable only as free options for Science students: Biology 61.190, Biology 61.393*, Chemistry 65.107, Geology 67.202*, Geology 67.204*, Mathematics 69.141*, Mathematics 69.142*, Physics 75.120, Physics 75.190, Physics 75.195, Science 60.100.

3. All Science Continuation Courses taken outside the Major department must be approved by the student's Major department or committee.

4. Courses counted in the Science sequence of the Integrated Science Studies Program will be determined and approved by the Integrated Science Studies Committee.

5. Biology Major and Honours students should refer to *Notes on Programs* (p. 367) for special Science Continuation Course provisions which apply to them.

Social Science Courses not Acceptable as Social Science Electives

Accounting

All courses.

Economics

43.220, 43.404*, 43.405*.

Geography

45.201*, 45.210*, 45.211*, 45.212*, 45.299*, 45.303*, 45.308, 45.312, 45.325, 45.345*, 45.346*, 45.402*, 45.411* (Geology 67.415*), 45.412*, 45.414*, 45.415*, 45.417*, 45.418*, 45.424*, (Engineering 82.424*, Geology 67.417*).

Psychology

49.200*, 49.201*, 49.204*, 49.205*, 49.220*, 49.221*, 49.222*, 49.251*, 49.252*, 49.255*, 49.256*, 49.270*, 49.271*, 49.305, 49.321*, 49.325, 49.327*, 49.330*, 49.331*, 49.355*, 49.356*, 49.375*, 49.376*, 49.380*.

Sociology

53.370.

Academic Standing

Grading System

Standing in courses will be determined by departments and will be shown by alphabetical grades.

The grades used, with their corresponding grade points, are as follows:

A+ 12	B+ 9
A 11	B 8
A- 10	B- 7
C+ 6	D+ 3
C 5	D 2
C- 4	D- 1

Standings to represent special circumstances are as follows:

Aeg

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the

Science Committee on Admission and Studies in response to a student's application which meets the stipulations for examinations.

F

Failure. No academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of incomplete term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing. No academic credit.

Abs

Failure due to absence from the final examination where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Science Committee on Admission and Studies for deferred examination privileges.

IP

In Progress.

Course Load

The normal course load for a full-time student in the Faculty of Science, during the Winter session, is the equivalent of five full courses. The normal course load for a part-time student, in the Winter session, is the equivalent of two full courses.

Students may register for a maximum of two courses in the Summer session, i.e. two Evening courses, or one Evening and one Day course, or two Day courses.

A student may exceed the normal course load only with the Registrar's permission, which may be granted if a C average is maintained overall and in the Major field, and if recommended by the Major department. Part-time students may be granted permission if a C average is obtained in a minimum of two courses in the previous session.

Promotion and Failure

Full-time Students

Full-time students in First-year Science, in order not to fail their year in May, must, by then, have passed at least three full courses or equivalent.

To be promoted to the Credit System from First year, a full-time Science student must have passed at least four courses, including at least one full course or equivalent in Mathematics, and at least one full course or equivalent in each of two different experimental sciences. Students who have declared a Major or

Honours in a Mathematics program may replace one of these experimental sciences with a credit in Computer Science. In addition, students must obtain grades of C- or better in at least two full courses or equivalent, including at least one full course or equivalent in their intended Major.

For a student without advanced standing in any First-year courses, these four courses must be selected from those approved for a First-year Science program.

For a student (not repeating First year) with advanced standing in some First year courses, these four courses must include sufficient courses to complete the First-year Science program; the remainder of the four courses may include courses beyond the First year provided the student has retained credit for the prerequisite First-year courses. In the Major program one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have attained a grade of C- or better in one course from each of the Science and non-Science sequences.

This must be accomplished in one calendar year with not more than two Summer courses, supplemental or grade-raising examinations. The course work of those First-year Science students who almost meet promotion requirements is reviewed by the Dean's Committee on Promotion.

A full-time student who does not meet the requirements of promotion by the end of August examinations will have failed First year.

Part-time Students

To be promoted to the Credit System from First year, part-time students must, in the first six final examinations, have passed at least four courses approved for a First-year Science program including at least one full course or equivalent in Mathematics, and at least one full course or equivalent in each of two different experimental sciences, and attained a grade of C- or better in at least two of these courses.

In the Major program one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have obtained a grade of C- or better in one course from each of the Science and non-Science sequences.

All Degree Students

Failed students may repeat First year without encumbrances, retaining credit toward their degree (but not toward the completion of First year) for all courses graded C- or better.

A student repeating First year may register only in courses approved for a First-year Science program, but may include *one* course beyond the First year provided the student has retained credit for the prerequisite First year course.

A student who fails First year a second time may not re-enter a degree program in the Faculty of Science.

After promotion to the Credit System the student will accumulate course credits under a pattern approved by the appropriate department or committee.

Supplemental Examination Privileges

First year full-time students may write two supplemental or grade-raising examinations provided that success in these examinations will complete the First year program.

First year part-time students may write two supplemental or grade-raising examinations in the first four courses of their program credited towards the degree.

Major degree students have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses, subject to the following restriction: After admission to the Credit System, the ratio of total number of (full course equivalent) examinations to the total number of credits required may not exceed three to two. In particular, a student who requires ten more credits has the equivalent of at most fifteen full-course examinations available to complete his or her program.

Honours degree students have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses subject to the following restriction: After admission to the Credit System, the ratio of total number of (full course equivalent) examinations to the total number of credits required may not exceed six to five. In particular, a student who requires fifteen more credits has the equivalent of at most eighteen full course examinations available to complete the program.

The number of examinations available to a student who transfers from another institution or from another program, will be determined on a *pro rata* basis and will be specified at the time of admission.

When a student is examined in a course which previously has been declared extra to the degree program, this examination does not affect the remaining number of available examinations.

Students who cannot complete their program without exceeding the available number of examinations lose their undergraduate status in the Faculty of Science.

Graduation

General Regulations

1. Every student will be required to complete at least the last five courses at Carleton;

2. A student who takes courses elsewhere with a letter of permission from the Science Committee on Admission and Studies may, with the approval of the appropriate department or committee, use the credit value but not the grades to meet graduation requirements;

3. Students who transfer to the Faculty of Science from another institution must include in the courses presented for degree (whether obtained at Carleton or elsewhere) at least:

(a) two Arts or Social Science electives if on transfer they received credit for less than ten courses (or equivalent);

(b) one Arts or Social Science elective if on transfer they received credit for ten or more courses.

Major Degree Students

To qualify for graduation a student must:

1. present credits for fifteen approved full courses (or equivalent) beyond Qualifying University year with not more than two courses below the 100 level and not more than seven below the 200 level;

2. have a grade of C- or better in at least half of the fifteen credits;

3. have an average of C- or better in the courses in his or her Major subject or subjects;

4. after entry to the credit system, have completed the program with not more than three (full course equivalent) examinations for every two credits required. (Examinations include supplemental and grade-raising examinations, course repetitions and replacements.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;

5. include at least two courses in the Major subject or subjects in the last five courses taken for credit;

6. be recommended by the Major department(s) and the Science Faculty Board (see general regulation 3).

To meet the requirements for the C- average in the Major stated above, only those courses in the Major necessary to make up the required total for graduation in the Major department need be counted. All obligatory courses must be counted.

A graduating student in a Major program of the Faculty of Science will be designated as graduating "with distinction" if:

1. he or she has successfully completed the fifteen courses required for the degree without a course failure, supplemental examination, course repetition or replacement;

2. The ten courses taken beyond the First year requirements (a) were approved by the candidate's Department or Faculty and were completed while he or she was a registered student of Carleton University; (b) were graded by Carleton University either directly

or by acceptance and translation of the grade from another academic institution (at least five of these courses must be taken at Carleton University); (c) were graded under the Carleton University system and the grade point total was at least 90 grade points.

Integrated Science Studies Degree Students

See p. 390.

Honours Degree Students

To qualify for graduation with a Bachelor of Science degree with Honours a student must:

1. present credits for at least twenty approved full courses (or equivalent) beyond Qualifying University year with not more than two courses below the 100 level and not more than seven below the 200 level;

2. meet the requirements of the Faculty of Science and of the appropriate department or committee both with respect to course and grade requirements;

3. after entry to the Credit System, have completed the program with not more than six (full course equivalent) examinations for every five credits required. (Examinations include supplemental and special supplemental examinations, course repetitions and replacements.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;

4. include at least two courses in the Honours subject or subjects in the last five courses taken;

5. be recommended by the appropriate department or committee and the Science Faculty Board.

The Honours degree will not be awarded to students taking less than the equivalent of five full courses for credit at Carleton.

Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the grade-point average as follows:

Highest Honours

10.0 — 12 in Honours subject, and
8.0 or better overall

High Honours

9.0 or better in Honours subject, and
7.0 or better overall

Honours

6.5 or better in Honours subject, and
5.0 or better overall

Departments may recommend the higher designation of Honours degree in the case of a student one of whose indices is in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of degree for students with Combined Honours, the average is taken in each of the two subjects and the simple average of the two is used. If agreeable to the committee concerned, the final average may be computed on the basis of the weighted average of the required number of Honours courses in the two subjects.

Departments may use discretion for establishing the class of degree in counting the number of Honours courses where students have more than the minimum number of courses.

Students admitted to an Honours program prior to September, 1980, may have the following designations of classes of Honours shown on their degrees and determined on the basis of the grade-point average indicated:

First Class

9.0 — 12 in Honours subject, and
7.0 or better overall

High Second Class

8.0 or better in Honours subject, and
6.0 or better overall

Second Class

6.0 or better in Honours subject, and
4.0 or better overall

Students admitted to an Honours program prior to March, 1977 may have the following designations of classes of Honours shown on their degrees and determined on the basis of the grade-point average indicated:

First Class

9.0 — 12 in Honours subject, and
6.0 or better overall

High Second Class

8.0 or better in Honours subject, and
5.0 or better overall

Second Class

6.0 or better in Honours subject, and
4.0 or better overall

In addition, students admitted to an Honours program prior to September, 1977, may be awarded an Honours degree with *Third Class* Honours based on a grade-point average of 4.0 or better in the Honours subject and 3.6 or better overall.

The Biological Society sponsors academic and social events, promotes informal contact between students and faculty, and helps acquaint students with on-going biological research. Faculty adviser: Dr. M.B. Fenton.

There exists a Carleton University Student Chapter of the *Chemical Institute of Canada*. Faculty adviser: D.C. Wigfield.

The Geology Society sponsors lectures on geological topics, and organizes field trips and social events for all undergraduate students with an interest in Geology.

MATHSOC, the Carleton University Mathematics Society, features "Naire-Level Seminars" designed by and for mathematics undergraduates. The society office promotes contact between students at different stages in their studies. Faculty co-ordinator: John Poland.

Carleton's High School Mathematics Club, organizes a weekly evening meeting of films, lectures, workshops and problem sessions for local high school students seriously interested in mathematics. Faculty co-ordinator: John Poland.

The Physics Society sponsors visits to Government and Industrial laboratories in the Ottawa area, arranges special lectures on physics topics and social events for those interested in Physics.

Academic Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Science.

Officers of Instruction

Director

J.M. Neelin

Professors

J.M. Neelin

C.S. Tsai

H. Yamazaki

Associate Professor

K.B. Storey

Members of the Institute

Members

J.W. ApSimon (*Chemistry*)

D.R. Gardner (*Biology*)

K.W. Joy (*Biology*)

J.M. Neelin (*Biology*)

J. Sinclair (*Biology*)

K.B. Storey (*Biochemistry and Biology*)

C.S. Tsai (*Chemistry*)

D.C. Wigfield (*Chemistry*)

H. Yamazaki (*Biology*)

Associate Members

B. Hollebone (*Research Associate in Chemistry*)

S.A. Narang (*Adjunct Professor of Chemistry*)

H. Robertson (*Adjunct Professor of Biology*)

V.L. Seligy (*Adjunct Professor of Biology*)

I.C.P. Smith (*Adjunct Professor of Chemistry*)

Honours Program

The Institute of Biochemistry offers a four-year program leading to an Honours B.Sc. in Biochemistry, intended to provide a broad basic training for students planning a career in a biochemical field. Several courses in Biology and Chemistry (and resources from these departments) are integrated into the program to provide the background in these disciplines that is fundamental to an understanding of the Biochemistry of animals, microorganisms and plants.

Students entering the program must satisfy the general requirements for B.Sc. Honours (p. 356). The following twenty credits are required, taken in a pattern approved by the Director of the Institute:

1. Biology 61.100 or 61.101, 61.215, 61.325*, 61.335* and one of 61.417, 61.423, 61.424, 61.425, 61.426*, 61.427* or 61.435;
2. Chemistry 65.100, 65.210, 65.220, 65.320, 65.325*;
3. Biochemistry 63.300, 63.401*, 63.402*, 63.403* and a research project 63.498;

4. Physics 75.100, Mathematics 69.107*, 69.117* and 69.207*, plus one-half credit chosen from 69.208*, 69.217* or 69.257*;

5. Two approved Arts or Social Science courses;

6. Three free options. Some recommended courses include: Biochemistry 63.404*, Biology 61.321*, 61.330*, 61.351*, 61.417, 61.423, 61.424, 61.425, 61.426*, 61.427*, 61.435, 61.455, Chemistry 65.250, 65.310 or 311*, 65.350, 65.420*, 65.422*, 65.423*, Physics 75.235*, 75.236*, Mathematics 69.208*, 69.217*, 69.257* or 69.250, Computer Science 95.103* (60.200*).

Notes:

1. For the purposes of calculation, the "Honours Subjects" include all Biochemistry courses, plus the Biology and Chemistry courses listed in items 1 and 2 above.

2. Certain courses in the program have acceptable equivalents that may be approved by the Director.

3. In choosing a program, students should consider the prerequisites required for any courses that they wish to take in later years.

Graduate Program

No graduate program is offered by the Institute but the graduate offerings of the Departments of Biology and Chemistry include projects and courses which may be appropriate for students with an interest in Biochemistry. Details are found in the Graduate Studies and Research Calendar.

Courses Offered

Biochemistry 63.300

General Biochemistry

Chemistry and metabolism of proteins, lipids, carbohydrates and nucleic acids. Mechanism of action of enzymes. Metabolic control mechanisms and interrelations. Biological oxidation. Biosynthesis of structural, storage and informational compounds.

Prerequisites: Chemistry 65.220 or 65.222; Chemistry 65.210 or Biology 61.220*.

Day division: Three lectures and four hours of laboratory work a week.

J. Neelin, K.B. Storey

Biochemistry 63.401*

Methods in Biochemistry

The course deals with the principles and applications of modern biochemical methodology, including use of radioisotope tracers, ultracentrifugation, electrophoresis and ion-exchange chromatography.

Prerequisite: Biochemistry 63.300.

Day division, First term: Lectures and discussion two hours, laboratory six hours a week.

H. Yamazaki

Biochemistry 63.402★

Biomacromolecules

Biochemistry of polysaccharides, proteins and nucleic acids. Discussion of experimental approaches to purification and conformational studies of biomacromolecules, their interaction in solutions, function and regulation of enzymes. Workshop sessions include discussion of experimental design and interpretation, and solving of related numerical problems.

Prerequisite: Biochemistry 63.300.

Day division, Second term: Lectures two hours, workshop or project three hours a week.

C.S. Tsai

Biochemistry 63.403★

Metabolic Regulation

The course includes discussion of topics concerned with the regulation of intermediary metabolism.

Prerequisite: Biochemistry 63.300.

Day division, First term: Lectures three hours, workshop two hours a week.

K.B. Storey

Biochemistry 63.404★

Industrial Biochemistry

A course illustrating the application of biochemistry to the production of biological compounds useful in nutrition, medicine, and the food and chemical industries. The course also reviews the general strategies for efficient production of these compounds by controlling the activities of living cells or enzymes.

Prerequisites: Biochemistry 63.300 or permission of the Institute.

Day division, Second term: Lectures three hours a week.

H. Yamazaki

Biochemistry 63.491★

Selected Topics in Biochemistry

Selected topics of current interest in biochemistry are offered upon approval by the Director in consultation with members of the Institute.

Day division.

Biochemistry 63.498

Research Project

Students carry out a research project in either the Biology or Chemistry departments, under the supervision of a faculty member. A report must be submitted to the supervisor by the last day of classes, and will be examined by a committee. Extension to the deadline will be allowed only with the permission of the Institute under exceptional circumstances.

Day division: Laboratory and associated work average at least eight hours a week.

Officers of Instruction

Chairman

H.G. Merriam

Associate Chairman (Undergraduate Studies)

D.R. Gardner

Associate Chairman (Graduate Studies)

C.A. Barlow

Professor Emeritus

H.H.J. Nesbitt

Professors

C.A. Barlow

W.E. Beckel

H.F. Howden

V.N. Iyer

K.W. Joy

P.E. Lee

M.E. McCully

J.M. Neelin

G. Setterfield

J.A. Webb

F. Wightman

H. Yamazaki

Associate Professors

I.L. Bayly

T.W. Betz

G.R. Carmody

M.B. Fenton

D.R. Gardner

W.I. Illman

S.L. Jacobson

J.D.H. Lambert

H.G. Merriam

S.B. Peck

J. Sinclair

D.A. Smith

K.B. Storey

Instructors

Roslyn Grey

Ann Hutton

Adjunct Professors

W.A. Keller (*Agriculture Canada*)

L. Lefkovitch (*Agriculture Canada*)

E.E. Lindquist (*Agriculture Canada*)

J. McNeill (*Agriculture Canada*)

D.R. Oliver (*Agriculture Canada*)

M.K. Pomeroy (*Agriculture Canada*)

H. Robertson (*Agriculture Canada*)

V.L. Seligy (*National Research Council*)

D.M. Wood (*Agriculture Canada*)

Curator of Cryptogamic Botany, W.I. Illman

Curator of Greenhouses, H. Datema

Curator of Herbarium, I.L. Bayly

Curator of Zoology Museum, D.A. Smith

General Information

Students intending to Major in Biology are strongly advised to acquire a good background in Chemistry and Physics as well as Mathematics at the Grade 13 or equivalent level.

Undergraduate Programs

The Biology Department offers both Honours and Majors programs leading to either a B.Sc. or a B.A. in Biology. Students enrolled in any of these programs must arrange their courses in consultation with the Chairman or Associate Chairman of the Department, in one of the patterns outlined below.

Major Programs

Bachelor of Science in Biology

The Bachelor of Science program in Biology recognizes the strong dependence of most modern Biology on the physical sciences and mathematics. It treats Biology as a unified subject based on common principles and qualities expressed in diverse ways by different organisms. The Major program is not primarily regarded as professional preparation by itself, but its aim is to provide a strong base in concepts and basic facts which should be adaptable to changing demands and needs in modern society. Students enrolled for a Bachelor of Science degree with a Major in Biology must satisfy the general requirements for Science stated on pp. 355-362 and take the following fifteen courses in a pattern approved by the Chairman:

1. Six Biology courses to include 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.325*, 61.335*, 61.361*;
2. Chemistry 65.100, Physics 75.100*, Mathematics 69.107* and one of 69.117* or 69.127* or equivalent†;
3. Two additional Science courses above the 100 level and not in Biology†;
4. One additional Science course†;
5. Two approved courses offered by the Faculties of either Arts or Social Sciences.
6. One free option.

†See *Notes on Programs*, p. 367.

Bachelor of Arts in Biology

Students enrolled for a Bachelor of Arts degree with a Major in Biology must satisfy the general requirements

of the Faculty of Social Sciences stated on pp. 83-94 and must maintain at least a C- average in Biology courses. The student will follow either the Major Program or Combined Major Program described on p. 120. In either case the approval of the Chairman or Associate Chairman of the Biology Department is required. For the Combined Major program, the student should also consult with the Department of the other Major subject.

Honours Programs

Honours Bachelor of Science in Biology

The Honours program in Biology is primarily intended for students planning a professional career in research, teaching or administration in biology, or in one of the fields of applied biology, such as the health sciences, agriculture or environmental science. An Honours degree is usually essential for admission to Graduate Studies. Students planning such a career are strongly advised to enter the Honours program as early as possible, certainly by the end of the Second year. Students enrolled for the Honours B.Sc. degree in Biology must satisfy the general requirements for Honours stated on pp. 355-362 and take the following twenty courses in a pattern approved by the Chairman. (This allows specialization in such biological subdivisions as ecology, behaviour, cell and molecular biology, genetics, plant or animal physiology and development, systematics.):

1. Seven Biology courses, to include 61.100† or 61.101†, 61.201*, 61.202*, 61.215, 61.220*, 61.261*, 61.325*, 61.335*, 61.361*, 61.498;
2. Chemistry 65.100, Physics 75.100†, Mathematics 69.107* and one of 69.117* or 69.127*, or equivalent.
3. Two additional Science courses above the 100 level and not in Biology†.
4. Four advanced Science courses, selected in consultation with a faculty member working in the area of specialization chosen by the student;
5. One additional course, chosen in consultation, related to the student's area of specialization;
6. Two approved courses offered by the Faculty of either Arts or Social Sciences;
7. One free option.

†See *Notes on Programs*, p. 367.

Honours students must pass a course or demonstrate a reading knowledge in French, German or Russian early in the Fourth year.

Fourth-year students are strongly urged to attend the departmental research seminars.

Selection of Fourth-year courses can introduce into the student's program a certain amount of specialization. Possible areas of specialization include mole-

cular, cellular and developmental biology, plant and animal physiology, ecology, and systematics. Courses should be chosen in consultation with the Chairman or a faculty member working in an area close to the interests of the student. This consultation should preferably begin before entering the Third year, to ensure that courses which may be given only in alternate years are taken in the correct sequence. In any case, students must consult with the Chairman before registering in the Fourth year.

Combined Honours in Biology and Geology

Students desiring a comprehensive basic training in both Biology and Geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.100 or 61.101 (or 61.201* and 61.202*)† (and Geology 67.100.)

Course requirements of the Combined Honours program are as follows:

1. Biology 61.100† or 61.101†, Geology 67.100, Mathematics 69.107* and 69.117* (or 69.127*) and one of Chemistry 65.100, Physics 75.100 or 75.105. (The omitted subject must have been taken at the Grade 13 level).
2. Ten courses in Biology (or Biochemistry) and Geology beyond First-year level, including at least one course involving a field camp. Not more than six courses in this group should be taken in one department and not more than six may be at the 200 level.
3. Biology 61.498 or Geology 67.498.
4. One half-course in Statistics. (Mathematics 69.257* is recommended) and one half-course in Computer Science. (Science 60.200* is recommended.)
5. Three optional courses, at least two of which must be acceptable courses offered by the Faculties of either Arts or Social Sciences.
6. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German, Russian, Spanish, Italian, Greek, or any language acceptable to the committee and in which suitable arrangements can be made for the examination.

Honours Bachelor of Arts in Biology

Students enrolled for the Honours Bachelor of Arts degree must satisfy the general requirements of the Faculty of Social Sciences stated on pp. 83-94 and must maintain at least a C+ average in Biology courses and a C- average overall. The student will follow either the Honours program or the Combined Honours program described on p. 120. In either case, the approval of the Chairman or the Associate Chairman of the Biology Department is required. For the Combined Honours program, the student should also consult the other Major department.

†Notes on Programs

(See items marked † in programs on pp. 120, 365, 366).

Students who have completed Grade 13 Biology before entry to First year may take Biology 61.100. In special cases a student entering First year may be able to proceed directly into 200-level courses. Students who have achieved a mark of at least 80% in Grade 13 Biology may apply to take a placement test during registration week. The test will be designed to demonstrate an adequate comprehension of the principles of cell biology, genetics, plant and animal science, ecology, and evolution. All other students must take Biology 61.101.

It is important to take Biology 61.220* in Second year; it is a critical prerequisite for other courses.

Students who do not meet the prerequisites or co-requisites for Physics 75.100 may substitute Physics 75.105 in its place, but it should be noted that Physics 75.100 is preferred as preparation for Biology 61.351*, 61.335* and 61.435.

Mathematics 69.107* plus 69.117* equal former 69.100; 69.107* plus 69.127* equal former 69.101; students who must take Mathematics 69.106* may use it as a free option or 100-level Science option.

In choosing additional Science courses above the 100 level and not in Biology, students may select from the Science continuation courses listed on p. 358. In their selections, recent Biology students have favoured Biochemistry 63.300, 63.401*, 63.402*, 63.403*; Chemistry 65.210, 65.222, 65.320; Geology 67.233*, 67.234*; Mathematics 69.250, 69.257*; Science 60.200*; Geography 45.210, 45.308, 45.345; Psychology 49.220*, 49.221*, 49.270*. In addition, Chemistry 65.371*, Mathematics 69.207*, 69.208*, Physics 75.230, 75.291*, 75.292* are suggested for some students. Biology Major and Honours students (except students in the B.A., B.A. Combined Major, B.A. Honours and B.A. Combined Honours programs) may use Technology, Society, Environment 59.301, 59.302 or 59.401* in fulfilling the degree requirements, but only as a free option.

Graduate Program

The Department of Biology offers programs of study and research leading to M.Sc. and Ph.D. degrees in molecular, cellular and developmental biology, plant and animal physiology, ecology and systematics. Details will be found in the Graduate Studies and Research Calendar.

Courses Offered

Biology 61.100†

Current Concepts in Biology

A lecture and laboratory course exploring in detail

some of the current views and recent developments in various branches of biological science. A range of life processes and organisms is considered, illustrating fundamental concepts at the molecular, cellular, organism, and population levels of organization. Both lectures and laboratories will assume that the student already has sound background experience in Biology. Prerequisite: Ontario Grade 13 Biology or equivalent. Precludes additional credits for Biology 61.101, 61.190. Day division: Lectures three hours a week, laboratory (including projects) three hours a week.

†See Notes on programs p. 367.

M.B. Fenton, M.E. McCully, S. Peck, G. Setterfield

Biology 61.101†

Introductory Biology

A lecture and laboratory course for students who have little or no background in Biology. The course provides an introduction to principles of biological science and includes various aspects of cell biology, metabolism, and genetics, and the evolution, structure, function and ecology of living organisms. The laboratory is similar to that in Biology 61.100. This course is designed for students who have not completed Grade 13 Biology or equivalent.

Precludes additional credits for Biology 61.100, 61.190. Day division: Lectures three hours a week, laboratory (including projects) three hours a week.

J.D.H. Lambert, J. Sinclair

Biology 61.190

Biology and Man

A course for non-science Majors covering major biological concepts which bear directly on human culture, experience and the quality of life. Typically, topics are drawn from areas such as heredity, growth and reproduction, nutrition, evolution and ecology. Precludes additional credits for Biology 61.100, 61.101. Not a Science credit for B.Sc. Biology Majors.

Day division: Lectures and seminars three hours a week.

S.L. Jacobson, J.D.H. Lambert

Biology 61.201*

Animals: Form and Function

An investigation of invertebrates and vertebrates to relate their structure, function, behaviour and interactions with plants.

Prerequisite: Biology 61.100 (or Biology 61.101).

Day division, Second term: Lectures three hours a week, laboratory three hours a week.

M.B. Fenton

Biology 61.202*

Plants: Form and Function

An introduction to the structure and development of higher plants (at molecular, cellular and organism levels) discussed in relation to their function.

Prerequisite: Biology 61.100 (or Biology 61.101).

Day division, First term: Lectures three hours a week, laboratory three hours a week.

M.E. McCully

Biology 61.215

Genetics

A lecture and laboratory course on the mechanisms of inheritance and the nature of gene structure, composition and function.

Prerequisite: Biology 61.100 or Biology 61.101.

Day division: Lectures two hours a week, laboratory four hours a week.

G.R. Carmody

Biology 61.220*

Cell Physiology

The cell concept and the basic processes fundamental to life at the cellular level.

Prerequisites: Biology 61.100 or 61.101 and Chemistry 65.100. Note: This course is a prerequisite for 61.321*, 61.325*, 61.330*, 61.335*, and 61.351*.

Day division, First term: Lectures three hours a week, tutorial or laboratory four hours a week.

J.A. Webb

Biology 61.261*

Introduction to Ecology

An introduction to major concepts in ecology, their scientific basis, and their implications for biology and human existence.

Day division, First term: Lectures three hours a week; laboratory four hours a week.

Prerequisites: Biology 61.100 or 61.101.

H.G. Merriam

Biology 61.305*

Invertebrate Zoology

A course devoted to the study of invertebrate structure, physiology, ecology and behaviour.

Prerequisite: Biology 61.201*. Note: This course is a prerequisite for 61.405.

Day division, First term: Lectures two hours a week, laboratory four hours a week.

C.A. Barlow

Biology 61.309*

Morphology of Lower Plants

The morphology, reproduction and evolution of lower plants.

Prerequisite: Biology 61.202*.

Day division, First term: Lectures three hours a week, laboratory four hours a week.

W.I. Illman

Biology 61.311*

Mycology

The morphology, evolution and biological importance of the fungi.

Prerequisite: Biology 61.202*.

Day division, Second term: Lectures two hours a week, laboratory four hours a week.

W.I. Illman

Biology 61.312*

Phycology

An advanced half course dealing with the occurrence,

ecological role, morphology, reproduction and evolution of the algae.

Prerequisite: Biology 61.202*.

Day division, First term: Lectures two hours a week, laboratory four hours a week.

M.A. Hutton

Biology 61.321*

Cytology

The structure, composition, function and development of the major systems of cells and their organelles.

Prerequisite: Biology 61.220* or Biochemistry 63.300; the latter may be taken concurrently.

Day division, Second term: Lectures two hours a week, laboratory four hours a week.

P.E. Lee

Biology 61.325*

Plant Physiology

The main topics in physiology and metabolism of plants including nutrition, growth, germination and factors controlling these processes.

Prerequisite: Biology 61.220* or Chemistry 65.220 or 65.222; Biology 61.202* or permission of the Department.

Day division, Second term: Lectures three hours a week, laboratory four hours a week.

J.A. Webb

Biology 61.330*

Introductory Microbiology

The biology of microorganisms, particularly in relation to their physiology and economic significance.

Prerequisite: Biology 61.220* or Biochemistry 63.300; the latter may be taken concurrently.

Day division, Second term: Lectures three hours a week, laboratory four hours a week.

Not offered 1980-81; Next offered 1981-82.

Biology 61.335*

Animal Physiology

The properties of physiological systems and components of animals with emphasis on their physiochemical bases.

Prerequisites: Biology 61.220* or Chemistry 65.210; Physics 75.100 or 75.105 and Mathematics 69.107*, and 69.117* or 69.127* are strongly recommended.

Day division, First term: Lectures three hours a week, laboratory four hours a week.

S.L. Jacobson

Biology 61.351*

The Biophysics of Animal Movement

A biophysical treatment of various types of animal motion. Topics covered include the properties of muscles, tendons, bones, joints and the co-ordinated use of these structures. Human locomotion and fitness, bird flight, especially the soaring of the vulture and the albatross, and animal migration are discussed in detail.

Prerequisites: Biology 61.220* and Physics 75.100 or 75.105 or permission of the Department.

Day division, Second term: Lectures three hours a week, tutorial/seminar one hour a week.

J. Sinclair

Biology 61.361*

Analytical and Experimental Ecology

A half course utilising the concepts presented in Biology 61.261* and selected ecological experiments to analyse ecosystem types and the major factors that characterise them.

Prerequisite: Biology 61.261*.

Day division, Second term: Lectures three hours a week, laboratory four hours a week.

H.G. Merriam

Biology 61.363*

Principles and Practices in Plant Ecology

This half course stresses the dynamics and structures of plant communities. Topics include community structure, nutrient cycling, animal-plant-substrate relationships, sampling and analytical techniques, and resource management.

Prerequisite: Biology 61.261*.

Day division, First term: Lectures three hours a week, laboratory three hours a week.

I.L. Bayly

Biology 61.365*

Field Course

A half course providing students with an opportunity for intensive, continuous study of living organisms under natural conditions. Credit is based on two weeks of full-time field work with attendant assignments, selected from several one- or two-week modules with various instructors. Costs of long-distance transportation (if applicable), room and board relating to the course are borne by the student. Details may be obtained from the co-ordinator. (Also listed as Psychology 49.386*, animal behaviour modules only.)

Prerequisites: At least one course in Biology beyond the 100 level, and written permission of the Department. No more than one half credit may be obtained from Biology 61.365*.

Day division: All day, approximately six days a week, offered at different times during the year.

M.B. Fenton (co-ordinator)

Biology 61.370

The Flora and Fauna of Canada

An introduction to practical taxonomy and biogeography through field and laboratory study of representative Canadian plants and animals with emphasis on local forms. It is recommended that students make collections of plants and animals during the summer before the course is taken. Detailed directions may be obtained from the instructors.

Prerequisites: Biology 61.201* and 61.202*.

Day division: Lectures two hours a week, laboratory four hours a week.

I.L. Bayly, W.I. Illman, D.A. Smith

Not offered 1981-82.

Biology 61.391*

Biology in Society

A seminar half course dealing with selected areas of biological knowledge with direct relevance to social activities of man. Not available as a continuing Science course for students other than Biology Majors except with permission of the student's Major department.

Prerequisite: Biology 61.201* and 61.202*, 61.215 or permission of the Department.

Day division, First and Second terms: Seminar and discussion three hours a week.

Biology 61.393*

Biology and Development of Renewable Resources

A lecture/seminar half course for senior students in the Faculties of Arts and Social Sciences. Emphasis is placed on the role that biology and agriculture play in economic, technical, political and social development in Canada and in the Third World.

Prerequisite: Co-registration in advanced courses in the student's Major and permission of the Department. Available to Science students only as a free option.

Day division, First term: Lectures two hours a week, seminar three hours a week.

J.D.H. Lambert

Biology 61.405

Invertebrate Zoology

An advanced course on the classification, morphology, comparative physiology and evolution of invertebrate animals.

Prerequisites: Biology 61.305*.

Not offered 1980-81.

Biology 61.410

Plant Morphogenesis

A course dealing with the problems of plant development.

Prerequisites: Biology 61.202* and permission of the Department.

Not offered 1980-81. Next offered 1981-82.

Biology 61.415

Chordate Zoology

An advanced course on the classification, geographic distribution and evolution of the major groups of chordates. As part of the practical work, each student must make a collection of chordates, preferably during the summer before the course is taken. Detailed directions may be obtained from the instructor.

Prerequisite: Biology 61.201*.

Day division: Lectures two hours a week, laboratory four hours a week.

D.A. Smith

Biology 61.417

Methods In Molecular Genetics

The scope and purpose of the course is to review and acquire some familiarity with the successful use of genetic techniques in the solution of problems in molecular biology. Emphasis is on the laboratory, which is "unstructured", and on discussion of innova-

tions in genetic techniques. The course is suitable for students with a developing interest in problems of molecular and cellular biology and biochemistry.

Prerequisites: Biology 61.215 or equivalent and a course in Biochemistry or Microbiology.

Day division: Lectures two hours a week, laboratory four hours a week.

V.N. Iyer

Not offered 1981-82.

Biology 61.418

Population Genetics

A lecture and seminar course on both theoretical and experimental population genetics.

Prerequisite: Biology 61.215. A course in statistics is highly recommended.

Not offered 1980-81.

Biology 61.423

Analytical Cell Biology

A lecture and laboratory course dealing with the theory and practice of modern analytical methods used in experimental cell biology. Emphasis is on methods which give information relating to cell structure or structure-function relations such as fixing, sectioning, staining, light and electron microscopy, autoradiography, photomicrography and biophysical methods. Some treatment of related biochemical techniques such as cell fractionation, electrophoresis and immunodiffusion is also included. The main emphasis is on independent laboratory work.

Prerequisite: Biology 61.321* or equivalent.

Not offered 1980-81. Next offered 1981-82.

Biology 61.424

Experimental Cell Biology

A lecture and seminar course on modern aspects of the molecular organization, division, growth, differentiation and interactions of cells. Particular emphasis is paid to genome organization and function, ribosomes, endomembranes and protein synthesis, self assembly processes, cell membranes, and cell interactions, cell division and cell movements, cell-tissue relationships, regulation of cell processes, aging, abnormal cellular processes. The main level of treatment is at the microscopic and macromolecular levels. Emphasis is on eucaryotic organisms, both animal and plant, although, where relevant, prokaryotes are considered. Students are expected to present one seminar in each term.

Prerequisite: Biology 61.215 and 61.321* or equivalent.

Day division: Lectures two hours a week, seminars two hours a week.

G. Setterfield

Not offered 1981-82.

Biology 61.425

Physiology of Plant Growth and Development

An advanced lecture and laboratory course dealing with physiology and biochemistry of seed germination, seedling growth and vegetative development, flower-

ing, fruiting, senescence and winter dormancy in the higher plants.

Prerequisites: Biology 61.325* and Chemistry 65.220 or 65.222.

Day division: Lectures two hours a week, laboratory four hours a week.

F. Wightman

Biology 61.426*

Plant Metabolism I

A lecture and seminar course with emphasis on autotrophic metabolism of plants, including photosynthetic processes, nitrogen assimilation and sulphur reduction.

Prerequisites: Biology 61.325* and Biochemistry 63.300 or Chemistry 65.220 or 65.222.

Not offered 1980-81.

Biology 61.427*

Plant Metabolism II

A lecture and seminar half course of selected topics including: metabolic basis of physiological responses, regulatory mechanisms in plants, metabolic aspects of crop productivity.

Prerequisite: Biology 61.325*. Biochemistry 63.300 is recommended.

Day division, Second term: Lectures two hours a week.

F. Wightman

Biology 61.435

Animal Physiology

A course dealing in some detail with advances made in particular areas of animal physiology. (1980-81: neurophysiology.)

Prerequisites: Biology 61.335*, Chemistry 65.220 or 65.222, Chemistry 65.210, and Physics 75.100 or 75.105, or permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

D.R. Gardner

Biology 61.440

Taxonomy of the Flowering Plants

A general survey of the flowering plants, the bases for classification and the history of taxonomy. A project is assigned.

Prerequisite: Biology 61.202*.

Not offered 1980-81. Next offered 1981-82.

Biology 61.447

Quantitative Ecology

Quantitative and qualitative analyses of the distribution and abundance of plant and animal species and communities, and of related environmental phenomena.

Prerequisite: Biology 61.261* and 61.361* and Mathematics 69.257* or equivalent.

Day division: Lectures two hours a week, laboratory four hours a week.

C.A. Barlow

Biology 61.455

Animal Development

A lecture, seminar and laboratory course on the descriptive and experimental parameters of animal development.

Prerequisites: Biology 61.201* and permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

T.W. Betz

Not offered 1981-82.

Biology 61.460

Insect Morphology

A course on the morphology of representatives of the more important orders and families of insects. This course is complementary to Biology 61.461, which is offered in alternate years.

Prerequisite: Biology 61.201*.

Not offered 1980-81.

Biology 61.461

Principles of Systematic Entomology

A lecture and laboratory course devoted to the study of identification of insects, the principles of theoretical taxonomy, some aspects of insect behaviour and control measures. Instructions and equipment for the required insect collection can be obtained the spring prior to the course from Dr. Howden. This course is complementary to Biology 61.460.

Prerequisite: Permission of the Department.

Day division: Lectures two hours a week, laboratory four hours a week.

H. Howden

Biology 61.469*

Evolutionary Concepts

Evolution as related to gene pools, isolation, speciation, natural selection, competition, dominance, and distributional patterns; examples from North America biota are emphasized.

Prerequisite: Biology 61.201* and 61.202*. Biology 61.261* and 61.361* are strongly recommended.

Day division, First term: Lectures two hours a week, laboratory four hours a week.

H. Howden

Biology 61.471*

Evolution and Biogeography

A continuation of concepts developed in Biology 61.469* and applied to world biotic patterns. Community evolution, tropical diversity and temporal stability are considered.

Prerequisite: Biology 61.469*.

Day division, Second term: Lectures two hours a week, laboratory four hours a week.

H. Howden

Biology 61.475

History of Biology

A seminar course on the history of biology and biological theory.

Prerequisites: Biology 61.215, a course in physiology at least concurrently, and permission of the Department.

Day division: Seminar two hours a week.

H.H.J. Nesbitt

Biology 61.481*

Animal Behaviour

An advanced half course in the study of animal behaviour. Topics such as predator-prey interactions, mating behaviour, migration, mother-young interactions, social behaviour and inter- and intra-specific spacing behaviour are interpreted in an ecological context. Lectures, seminars and laboratories are used to achieve this coverage.

Prerequisites: Biology 61.335* and 61.261* and 61.361* (or suitable equivalents) and with written permission of the Department. Enrolment limited.

Not offered 1980-81.

Biology 61.490

Directed Special Studies and Seminar

Day division: Annually, with permission of the Department.

Biology 61.491*

Directed Special Studies

Day division, both terms: Annually, with permission of the Department.

Biology 61.497

Independent Study

A course for independent research and study from library sources, under the supervision of a member of the Department, open only to students in the Honours B.A. programs. A major paper reporting the research must be submitted to the supervisor by April 1 of the Winter session or August 15 of the Summer session and the student will be examined orally on the topic of the paper by a panel of three faculty members.

Credit will not be given for both Biology 61.497 and 61.498.

Biology 61.498

Research Project

Fourth-year Honours students must carry out a research project under the supervision of a member of the Department. Approval of the topic and research schedule must be obtained from the supervisor and Chairman before the last day for late registration. Each student's performance is examined by a Faculty Committee after the completion of the project. 70% of the grade is awarded by the supervisor based on the completed research report, and the student's performance in the project. 30% of the grade is awarded by the supervisor and two advisers based on the report

and the student's performance in an oral examination based on the report. The written report must be submitted by the last day for submission of course assignments. Extensions of the deadline will be allowed only at the discretion of the Chairman of the Department.

Courses Planned for Summer School 1981

Summer 1981

61.261★, 61.491★, 61.498.

Officers of Instruction

Chairman

D.R. Wiles

Professors

C.H. Amberg
J.W. ApSimon
R.G. Barradas
C.L. Chakrabarti
J.M. Holmes
J.A. Koningstein
P. Kruus
C.H. Langford
P.M. Laughton
C.S. Tsai
D.C. Wigfield
D.R. Wiles

Associate Professors

G.W. Buchanan
B.R. Hollebone
M. Parris
R.A. Shigeishi
R.H. Wightman
J.S. Wright

Adjunct Professors

H.J. Bernstein, *National Research Council (Ret.)*
E.J. Casey, *Department of National Defence*
O.E. Edwards, *National Research Council*
H.H. Mantsch, *National Research Council*
S.A. Narang, *National Research Council*
I.E. Puddington, *National Research Council (Ret.)*
I.C.P. Smith, *National Research Council*

General Information

Students intending to enter a program in Chemistry should have a strong background in Mathematics and Physics as well as in Chemistry. The three-year Major and four-year Honours programs in Chemistry are described below. Students interested in continuing their careers in secondary school teaching, graduate studies or as professional chemists are advised to enrol in the Honours program.

A Combined Honours program in Chemistry and Geology is available as described below.

While Combined Honours in Chemistry and Mathematics or Chemistry and Physics are not formally available, strong continuation groupings in Mathematics and/or Physics can be arranged under the Honours Chemistry program. Secondary specialization in Biology can be arranged under the Honours Chemistry program, or under the joint program in Honours Biochemistry. In evaluating students for entry with advanced standing, the Department of Chemistry transfers credits but not grades.

Major Program

A total of ten courses is required for graduation after completion of the First-year Science Faculty requirements. This program must be completed before continuation into Second year and must include Chemistry 65.100, Mathematics 69.107*, 69.117*, Physics 75.100 and one other First-year Science course.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.250 and two full credits in Third-year Chemistry including Chemistry 65.311* or 65.310, and at least one of 65.315*, 65.325* or 65.355*; only one of Chemistry 65.370* and 65.371* may be used to meet the Third-year requirement;
2. Mathematics 69.107*, 69.117* and 69.202 or approved equivalents;
3. Physics 75.100, 75.235* and 75.236* or approved equivalents;
4. A First-year Science course (as required in the First-year program);
5. Two Arts or Social Science electives (see Science Faculty regulations);
6. One Science course or other approved course chosen after consultation with the Department of Chemistry;
7. One free option.

In addition to the Faculty requirement of a C- average in Chemistry, the Department also requires at least half C- or better standing, and counts all Chemistry courses taken.

It is recommended that candidates choose a course in French, German or Russian as one of their Arts electives.

Honours Program

A total of fifteen courses is required for the degree after completion of First-year Science requirements. These requirements are the same as for the Major program except that, based on the results of an assessment test and permission of the Chairman of the Department, outstanding students may be allowed to take Chemistry 65.220 in the First year instead of Chemistry 65.100. However, the total number of courses required will remain unchanged. In addition to the Faculty requirement of a C+ average in Chemistry, the Department also requires at least half C+ or better standing, and counts all Chemistry courses taken.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.250, 65.310; two of 65.315*, 65.325* and 65.355*; one full credit from 65.320, 65.321*, 65.350, 65.351* or Biochemistry 63.300; one full credit at the 400 level in Chemistry or Biochemistry; and Chemistry 65.498;

2. Mathematics 69.107*, 69.117* and 69.202 or approved equivalents;
3. Physics 75.100, 75.235* and 75.236* or approved equivalents;
4. A First-year Science course (as required in the First-year program);
5. Two Arts or Social Science electives (see Science Faculty regulations);
6. Three Science or other approved courses;
7. One free option.

Each candidate for Honours is required to demonstrate a reading knowledge of one of scientific French, German or Russian.

The Chemistry Department includes all Chemistry courses taken in calculating Honours standing.

Honours Project

All Honours candidates are required, as part of Chemistry 65.498, in the final year to carry out a substantial project and to write a report to their supervisor. Towards the end of the Third year, prospective candidates should obtain pertinent information from the departmental office. A brief progress report is to be presented to the supervisor and committee members before January 15. The deadline for submission of the final typed report is the first Monday in April. Honours students are also expected to attend departmental seminars in their specialty. The report and its defence are heavily weighted in determining the class of Honours awarded. The grade of *In Progress* will be restricted to unusual circumstances and subject to approval by the Department.

Combined Honours in Chemistry and Geology

Program Advisers: C.L. Chakrabarti and D. Watkinson

A total of fifteen courses is required for the degree after completion of the First-year Science requirements. The First-year program must include Chemistry 65.100, Geology 67.100, Mathematics 69.107* and 69.117*, and Physics 75.100.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.250, 65.350 and one Chemistry credit at the 400 level;
2. Geology 67.100, 67.221*, 67.222*, 67.228*, 67.281*, 67.323*, 67.324* and one Geology credit at the 400 level;
3. Either Chemistry 65.498 or Geology 67.498. Students should consult their program adviser about selection of this in their Third year;
4. One Chemistry or Geology elective;
5. Mathematics 69.107*, 69.117* and 69.202;
6. Physics 75.100;

7. Two Science electives;
8. Two Arts or Social Science electives;
9. One free option.

A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German or Russian.

Graduate Program

The Department of Chemistry offers studies leading to the degree of Master of Science and to the degree of Doctor of Philosophy. For further details consult the Graduate Studies and Research Calendar.

Courses Offered

Chemistry 65.010

Introductory Chemistry

An introductory course emphasizing the fundamental laws and principles of chemistry. Accurate working of numerical problems forms an important part of the course. The laboratory course is designed to teach fundamental techniques and to give familiarity with some physical and chemical properties of a selected group of substances.

Day division: Lectures three hours a week, laboratory three hours a week.

R.G. Barradas

Chemistry 65.100

General Chemistry

Solution equilibria, acid and base chemistry; electronic structure of atoms; energy states and spectra; descriptive chemistry and periodic properties of the elements; the structure of covalent and ionic substances; energy relationships and theories in bonding, equilibria, and rates of reactions. The laboratory course gives training in fundamental techniques and methods of experimental work in analysis, synthesis and other aspects of chemistry.

Prerequisites: Chemistry 65.010 and Mathematics 69.006* and 69.007*, or equivalent. This course is intended for students in all programs who plan to take further Chemistry courses.

Precludes additional credit for Chemistry 65.111*.

Day division: Lectures three hours a week, laboratory three hours a week.

B.R. Hollebone, C.S. Tsai

Chemistry 65.107

The Chemistry of Art and Artifacts

A non-mathematical course designed for archaeologists and historians dealing with the deterioration and preservation of artifacts and works of art, this course treats: the nature and reactions of chemical substances such as stone, metal, wood, and painting materials;

modern methods of studying materials and their deterioration; methods of arresting deterioration. Guest lectures and visits to local laboratories and other sites will be arranged.

Prerequisites: Grade 12 Chemistry and Mathematics or permission of the Department.

Day division: Lectures three hours a week. Laboratory work may be arranged on request.

C.H. Amberg, D.R. Wiles

Chemistry 65.111*

Chemistry for Engineering Students

This First-year course is designed to familiarize students with chemical principles applicable to Engineering problems. Topics such as atomic structure; the periodic system; ions and valence are treated, as are chemical crystallography, the properties of metals, semiconductors and insulators, and the properties of electrolytic solutions. This course is not a prerequisite for further Chemistry courses. Individual students wishing to take further Chemistry courses will, however, be considered on their merits. Credit may not be retained both for this course and for Chemistry 65.100. Prerequisites: Chemistry 65.010, Mathematics 69.006* and 69.007*, or equivalents.

Day division, First term: Lectures three hours a week, laboratory three hours a week.

D.C. Wigfield, D.R. Wiles

Chemistry 65.210

Introductory Physical Chemistry

An introduction to thermodynamics and its application to problems of phase equilibria, chemical equilibria, surface chemistry, and electrochemistry. Principles of chemical dynamics and their application to analysis of reaction mechanisms.

Prerequisites: Chemistry 65.100 and Mathematics 69.107* and 69.117* or equivalent.

Day and Evening divisions: Lectures three hours a week, problems one hour a week, laboratory three hours a week.

J.M. Holmes, R.A. Shigeishi

Chemistry 65.220

Introductory Organic Chemistry

Structure, synthesis and reactions of the main functional groups using both aliphatic and aromatic examples and emphasizing a mechanistic approach. Elementary stereochemistry. Biologically and industrially important molecules used as examples whenever possible. The laboratory includes transformations and characterization of selected functional groups as well as introductory spectroscopy.

Precludes additional credit for Chemistry 65.222.

Prerequisite: Chemistry 65.100.

Day division: Lectures three hours a week, laboratory four hours a week.

G.W. Buchanan

Chemistry 65.222

Introductory Organic Chemistry

A course for non-chemistry Majors. An introduction to organic chemistry paralleling Chemistry 65.220 but with an introduction to, and emphasis on, the chemistry of biologically important compounds. Laboratory similar to Chemistry 65.220.

Precludes additional credit for Chemistry 65.220.

Prerequisite: Chemistry 65.100.

Day division: Lectures three hours a week, laboratory four hours a week.

D.C. Wigfield

Chemistry 65.250

Elementary Inorganic and Analytical Chemistry

The chemical principles underlying gravimetric, titrimetric, and instrumental analysis; atomic structure, bonding, molecular and crystal structure; acid-base, coordination complex, and oxidation-reduction systems; solubility and crystallization; ionic solutions; chemistry of non-transition elements. Laboratory work in classical and instrumental analysis.

Prerequisites: Chemistry 65.100, Mathematics 69.107* and 69.117* or equivalent.

Day division: Lectures and problem sessions three hours a week, laboratory four hours a week.

C.L. Chakrabarti

Chemistry 65.310

Physical Chemistry

An introduction to quantum mechanics, and its use in explaining atomic and molecular structure and spectra; introduction to statistical mechanics and its application to simple systems; theories of chemical kinetics with applications.

Precludes additional credit for Chemistry 65.311*.

Prerequisites: Chemistry 65.210, Mathematics 69.202 or equivalent.

Day division: Lectures and problems four hours a week.

P. Kruus

Chemistry 65.311*

Introductory Quantum Chemistry

Introduction to quantum theory, with emphasis on chemical applications. Wave functions, energy states, atomic orbitals, origins of chemical bonding, vibrational and electronic spectra, hybridization and molecular structure, symmetry, Hückel theory of conjugated molecules.

Prerequisites: Chemistry 65.210, Mathematics 69.202, or equivalent.

Day division, First term: Lectures and problems three hours a week.

J.A. Koningstein

Chemistry 65.315*

Experimental Physical Chemistry

A laboratory-based course designed to acquaint students with advanced concepts in physical chemistry and the use of more advanced physico-chemical

techniques in other areas of chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.210 and at least one of 65.220 and 65.250. Prerequisites or co-requisites: Chemistry 65.310 or 65.311*.

Day division, both terms: Laboratory and seminars five hours a week.

R.A. Shigeishi

Chemistry 65.320

Intermediate Organic Chemistry

Molecular rearrangements and other organic reactions not previously studied. Synthetic sequences. Mechanisms with emphasis on reactive intermediates. Structure elucidation and stereochemistry using instrumental methods. Use of the literature of organic chemistry. Topics selected from: heterocyclic compounds, natural products, polymers, newer synthetic methods, phosphorus and sulfur compounds, photochemistry, structure reactivity relationships.

Prerequisite: Chemistry 65.220 or 65.222.

Texts: Williams and Fleming, *Spectroscopic Problems in Organic Chemistry*; March, *Advanced Organic Chemistry, Second Edition*.

Day division: Lectures three hours a week.

R.H. Wightman

Chemistry 65.321*

Intermediate Organic Chemistry

Instrumental methods for the determination of structure. Intermediates in organic reactions. Organic stereochemistry. The literature of organic chemistry. Prerequisites: Chemistry 65.220 or 65.222.

Texts: Williams and Fleming, *Spectroscopic Problems in Organic Chemistry*; Williams and Fleming, *Spectroscopic Methods in Organic Chemistry*.

Day division, First term: Lectures three hours a week.

R.H. Wightman

Chemistry 65.325*

Experimental Organic Chemistry

A laboratory-based course including advanced concepts and techniques in organic synthesis, structure determination, and the rates and mechanisms of reactions. Students are responsible for literature surveys, acquisition of theoretical background, and design of experimental procedures.

Prerequisites: Chemistry 65.210 and either 65.220 or 65.222.

Prerequisites or co-requisites: Chemistry 65.320, 65.321* or Biochemistry 63.300 or permission of the Department.

Day division, both terms: Laboratory and seminars five hours a week.

R.H. Wightman

Chemistry 65.350

Intermediate Inorganic Chemistry

Valence theory, the periodic system, chemistry of the

transition metals: role of d orbitals, preferred oxidation states, periodic variation in ionic size, redox equilibria. Chemistry of coordination compounds: nomenclature, isomerism, stability constants, bonding and kinetics. Chemistry of organometallic compounds. Structure of metals, semi-conductors and non-stoichiometric compounds. Introduction to radiochemistry.

Prerequisites: Chemistry 65.210, 65.250.

Day division: Lectures three hours a week.

M. Parris

Chemistry 65.351*

Intermediate Inorganic Chemistry

Valence theory, the periodic system, chemistry of the transition metals: role of d orbitals, preferred oxidation states, periodic variation in ionic size, redox equilibria. Chemistry of coordination compounds: nomenclature, isomerism, stability constants, bonding and kinetics. Prerequisites: Chemistry 65.210, 65.250.

Day division, First term: Lectures three hours a week.

M. Parris

Chemistry 65.355*

Experimental Inorganic and Analytical Chemistry

A laboratory-based course including advanced concepts and techniques in inorganic synthesis, structure determination, and analytical chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.210 and 65.250.

Prerequisites or co-requisites: Chemistry 65.350, 65.351* or permission of the Department.

Day division, both terms: Laboratory five hours a week.

M. Parris

Chemistry 65.370*

Industrial Applications of Chemistry

A course reviewing, relating and extending the material of prerequisite chemistry courses through studies of problems in applied chemistry and introducing concepts necessary for conversion of laboratory processes to the industrial scale. The course covers several topics designed to illustrate a wide range of applications in as many areas of chemistry as possible.

Prerequisites: Chemistry 65.210, and one of Chemistry 65.220, 65.222 or 65.250.

Day division, Second term: Lectures three hours a week.

P. Kruus

Chemistry 65.371*

Environmental Chemistry

A course applying chemical principles to the study of the hydrosphere, the atmosphere and soils. Topics include composition and history of the hydrosphere and atmosphere, equilibrium modelling, microbiological catalysis of chemical transformations, water sediment interfacial chemistry, soil chemistry, chemical aspects of pollution abatement.

Prerequisites: Chemistry 65.250, or Geology 67.325, or

Engineering 82.331* and 88.240*, or Chemistry 65.222 and Biology 61.220*, or Geography 45.308.
Not offered 1980-81.

Chemistry 65.410*

Quantum Chemistry

Theory of wave functions and energy levels of molecules. The variation method, molecular orbital calculations and aspects of group theory.

Prerequisite: Chemistry 65.310 or 65.311* or Physics 75.362* or permission of the Department.

Day division, First term: Lectures and seminars three hours a week.

J.A. Koningstein

Chemistry 65.411*

Advanced Calculations in Physical Chemistry

A course reviewing and extending the concepts covered in Chemistry 65.210 and 65.310 by applying these concepts to more advanced, practically oriented problems. The emphasis is on problems involving thermodynamics, statistical mechanics and kinetics.

Prerequisite: Chemistry 65.310 or permission of the Department.

Day division, First term: Lectures and seminars three hours a week.

P. Kruus

Chemistry 65.412*

Chemical Kinetics

Theories of rates of chemical reaction with application to elementary gas and solution reactions. Complex reactions in gases, solutions and on surfaces.

Prerequisite: Chemistry 65.310 or permission of the Department.

Day division, Second term: Lectures and seminars three hours a week.

J.S. Wright

Chemistry 65.413*

Colloid and Surface Chemistry

Properties and stability of colloidal systems, theories of adsorption, heterogeneous catalysis, and interfacial phenomena.

Prerequisite: Chemistry 65.210 or permission of the Department.

Day division, Second term: Lectures and seminars three hours a week.

J.M. Holmes

Chemistry 65.420*

Physical Organic Chemistry

Molecular orbital calculations. Woodward-Hoffmann rules. Experimental and theoretical methods for determining reaction mechanisms. Linear free energy relationships. Mechanism problem solving.

Prerequisites: Chemistry 65.320 or 65.321* and 65.310 or 65.311* or permission of the Department.

Day division, First term: Lectures and discussions three hours a week.

P.M. Laughton

Chemistry 65.422*

Structural Organic Chemistry

Methods of structural elucidation of complex organic molecules. Topics to include the use of instrumental methods, stereochemistry and conformational analysis. Prerequisite: Chemistry 65.320 or 65.321* or permission of the Department.

Day division, First term: Lectures and seminars three hours a week.

G.W. Buchanan

Chemistry 65.423*

Synthetic Organic Chemistry

The application of reactions to the synthesis of organic molecules. Emphasis on design of sequence, new reagents and stereoselectivity.

Prerequisite: Chemistry 65.320 or permission of the Department.

Day division, Second term: Lectures and seminars three hours a week.

J.W. ApSimon

Chemistry 65.430*

Electroanalytical Chemistry

Properties of ionic solutions, electrode processes, theory and application of electroanalytical techniques and reactions.

Prerequisites: Chemistry 65.250 and 65.310 or permission of the Department.

Day division, First term: Lectures and seminars three hours a week.

R.G. Barradas

Chemistry 65.431*

Trace and Ultratrace Analytical Chemistry

Sampling and sample preservation. The problems of the blank. Trace and ultratrace analysis. Analysis of ultrapure material. Atomic absorption, atomic fluorescence and atomic and molecular emission spectroscopy. Simultaneous and sequential multi-element analysis.

Prerequisites: Chemistry 65.210 and 65.250 or permission of the Department.

Not offered 1980-81.

Chemistry 65.432*

Solutions and Separations in Analytical Chemistry

Complex formation, multi-step and competing equilibria and their application to the design of selective methods of separation and determination. Electroanalytical chemistry of aqueous solutions. Phase equilibria and solvent extraction.

Prerequisites: Chemistry 65.210 and 65.250 or permission of the Department.

Text: Laitinen and Harris, *Chemical Analysis*, Second edition.

Day division, Second term: Lectures and seminars three hours a week.

C.L. Chakrabarti

Chemistry 65.450*

Applications of Ligand Field Theory

Introduction to quantitative crystal field theory; the weak field approximation and application to heats of ligation; the strong field approximation and application to spectra and magnetism of inorganic compounds.

Prerequisites: Chemistry 65.310 and 65.350.

Day division, Second term: Lectures three hours a week.

J.A. Koningstein

Chemistry 65.451*

Thermodynamic Aspects of Inorganic Chemistry

The course treats topics in solid state chemistry, high temperature chemistry, and solution chemistry that are especially susceptible to thermodynamic analysis. Applications in metallurgy and mineralogy will receive attention.

Prerequisites: Chemistry 65.210 and 65.350 or 65.351* or permission of the Department.

Day division, Second term: Lectures and seminars three hours a week.

P. Kruus

Chemistry 65.452*

Radiochemistry

A study of nuclear stability and decay; chemical studies of nuclear phenomena. Selected laboratory experiments are optional.

Prerequisites: Chemistry 65.210 and 65.350 or 65.351*, or permission of the Department.

Reference text: Friedlander, Kennedy, and Miller, *Nuclear and Radiochemistry*.

Day division, First term: Lectures and seminars three hours a week.

D.R. Wiles

Chemistry 65.498

Research Project and Seminar

Senior students in Honours Chemistry carry out a research project under the direction of one of the members of the Department. A written report and an oral presentation of the work are required before a grade can be assigned.

Day division, Annually: Laboratory and associated work at least eight hours a week.

Courses Planned for Summer School, Late Afternoon and Evening Division 1981-82

Summer 1981

65.100, 65.320, 65.321*

Evening Division 1981-82

65.100, 65.250, 65.420*, 65.430*, 65.431*, 65.451*

Officers of Instruction

Chairman
D.B. Knight

Supervisor of Honours Studies
P.J. Williams

Professors
J.P. Johnson, Jr.
P.J. Williams

Associate Professors
M.W. Smith
J.K. Torrance
T.P. Wilkinson

Assistant Professor
M.F. Fox

Adjunct Professors
G.C. Topp, *Land Resource Research Institute, Agriculture Canada*
R.O. Ramseier, *Atmospheric Environment Service, Environment Canada*

Sessional Lecturers
D. Monahan, *Canadian Hydrographic Service, Fisheries and Oceans*
R. Ryerson, *Canada Centre for Remote Sensing*

General Information

The Department of Geography, Faculty of Social Sciences, offers a full range of B.A. programs, in addition to the B.Sc. Honours program described here. For details consult the Department's main entry in this Calendar, beginning on p. 162.

Honours Program: B.Sc.

The Bachelor of Science Honours program in Physical Geography is designed to give the student an understanding of the earth's surface as man's physical environment. The student will specialize in the study of properties and processes of the earth's surface materials and atmosphere.

Program Requirements

The program consists of twenty credits beyond Senior Matriculation or Qualifying University year Science, selected in a pattern approved by the Supervisor of Honours Studies in the Geography Department, and consistent with the following requirements.

1. The First year of the program will be consistent with Science Faculty requirements for First-year Science.

2. The program will contain eight credits in Geography at or beyond the 200 level, including the Honours Research Project 45.496 which should be taken in the final year.

3. The remaining seven credits must include:
(a) Two approved credits in Science, not in Geography, beyond the 100 level;
(b) Two approved credits in Science, Computer Science or Engineering;
(c) Two Arts or Social Science electives, one of which must be an approved credit not in Geography;
(d) One free elective.

4. In meeting the requirements 1 to 3, seven credits to be taken must be selected from the lists below. These should include Geography 45.210*, 45.211* or 45.212*, 45.299*, 45.308, 45.312, and 45.345* or 45.346*. In special cases students may take an appropriate graduate course in their final year, with permission of the Supervisor of Graduate Studies.

Physical Geography Courses

- 45.200* Introduction to Cartography
- 45.201* Statistical Methods in Geography
- 45.202* Air Photo Interpretation and Remote Sensing
- 45.210* The Physical Environment
- 45.211* Geomorphology and Environmental Management
- 45.212* The Value of Weather
- 45.299* Introduction to Field Techniques
- 45.303* Quantitative Geography
- 45.308 Geography of Soils
- 45.312 Geomorphology
- 45.325 Cartography and Computer Mapping
- 45.345* Physical Climatology and Climatic Change
- 45.346* Understanding Weather
- 45.402* Problems in Physical Geography
- 45.403* Remote Sensing of the Environment
- 45.411* Quaternary Geography
- 45.412* Terrain Analysis
- 45.414* Microclimatology
- 45.415* Slope Development: Forms, Processes and Stability
- 45.417* Glacial Geomorphology
- 45.418* Selected Topics in Physical Geography
- 45.424* Soil Mechanics

Physics

75.100 or 75.105 (required course in the Second year of the program if not taken in First year)

Mathematics

69.257* or 69.258*

Geology

67.233* and 67.281*

Recommended Program Sequence

A recommended program is:

First Year

Mathematics 69.107* and 69.117*;
Chemistry 65.100;
Geology 67.100;
One of: Geography 45.210* with 45.211* or 45.212*; or
Biology 61.100; or Physics 75.100;
Arts or Social Science elective (may not be Geography
45.101, if 45.210* with 45.211* or 45.212* is selected).

Second Year

Geography 45.200*, 45.202*, 45.299*;
One of: Geography 45.210* with 45.211* or 45.212*;
45.308; 45.345* or 45.346* with an additional half
credit from preceding list of approved Physical
Geography courses;
Mathematics 69.257*;
Science elective or Physics 75.100 or 75.105 (required
course in Second year if not taken in First year);
Arts or Social Science elective.

Third Year

Geography 45.312;
Either Geography 45.308; or 45.345* or 45.346* with
an additional half credit from the preceding list of
approved physical geography courses;
One 400-level Geography credit;
One Science continuation credit;
Arts or Social Science elective.

Fourth Year

Three 400-level Geography credits (including 45.496);
One Science continuation credit;
Free option.

Notes:

A Human Geography course is recommended as one
of the Arts or Social Science electives.

The following courses are normally offered in alternate
years: Geography 45.211*/45.212*; 45.345*/45.346*;
45.411*/45.417*; 45.414*.

Graduate Program

The Department of Geography offers programs of
study leading to a Master's degree in Physical Geo-
graphy and Geotechnical Science. For further details
consult the Graduate Studies and Research Calendar.

Courses Offered

Full details of all individual course offerings are pre-
sented in the Department of Geography submission in
the Faculties of Arts and Social Sciences section of
the Calendar, p. 165.

Officers of Instruction

Chairman

To be announced

Professors

K. Bell
R.L. Brown
G.Y. Chao
J.A. Donaldson
P.A. Hill
J.M. Moore, Jr.
F.K. North
G.B. Skippen
W.M. Tupper

Associate Professors

K. Hooper
G. Ranalli
D.H. Watkinson
R.W. Yole

Adjunct Professors

E. Froese, *Geological Survey of Canada*
E. Irving, *Earth Physics Branch, Department of Energy, Mines and Resources*
I. Jonasson, *Geological Survey of Canada*
J. Kukalova-Peck, *Department of Geology, Carleton University*
D.F. Sangster, *Geological Survey of Canada*

Sessional Lecturers

R.L. Borden
A.E. Gunter
M.B. Lambert
B.N. Nandi
R.W. Stemp

Instructors

J.G. MacDonald
I. Munro
M.A. Wickens

Major Program

The B.Sc. program in Geology is of four years duration beyond Senior Matriculation or Qualifying University year. A total of twenty courses is required as follows:

1. The course requirements of the First year of the general B.Sc. program (p. 357).
2. At least ten courses in Geology, of which Geology 67.100, 67.221*, 67.222*, 67.228*, 67.281*, 67.233*, 67.234*, 67.323*, 67.324*, 67.333*, 67.334*, and 67.381*, 67.382* are mandatory. (Geology 67.100 may be taken either in Qualifying University or First year.) Students intending to Major in Geology should take Geology 67.100 rather than Geology 67.111* and

67.112*, which may be substituted only by permission of the Department. Geology 67.103* may replace 67.100 for students in the Work-Study Program. *Credit will be given for only one of Geology 67.100 or Geology 67.111*.*

3. At least six courses in the other sciences above Qualifying University year level. Among these, Mathematics 69.107*, and 69.117* or 69.127*, and Chemistry 65.100 are mandatory. At least two First-year Science or Mathematics courses must be passed before registration for Second-year Geology courses will be permitted, except that, if Geology 67.100 has been taken in Qualifying University year, a Second-year Geology course may be substituted.

4. Two approved courses in the Faculties of Arts and/or Social Sciences.

5. Two courses chosen from Science, Arts, Social Sciences or Engineering.

A three-year program for students not intending to become professional geologists is also available. Requirements are the same as for the B.Sc. program outlined above, except that no courses above the 300 series are required, and the total courses will number fifteen, including seven Geology courses, at least five Science courses outside of Geology, which must include Mathematics 69.107*, and 69.117* or 69.127* and Chemistry 65.100, two Arts or Social Science courses and one optional course.

A typical program is as follows:

First Year

Geology 67.100*;
Chemistry 65.100;
Physics 75.100 or 75.105 or Biology 61.100 or 61.101;
Mathematics 69.107*, and 69.117* or 69.127*;
Arts or Social Science elective.
(*May be replaced by another Science course if taken in Qualifying University year.)

Second Year

Geology 67.221*, 67.281* (includes field camp),
67.222*, 67.228*, 67.233* and 67.234*;
One First- or Second-year Science course;
One Arts or Social Science elective.

Third Year

Geology 67.323*, 67.324*, 67.333*, 67.334*, 67.381*,
and 67.382*;
Second-year Science course;
One elective (Arts, Social Science, Science or Engineering).

Fourth Year

Three Geology courses at the 400 level;
One Second-year Science course;
One elective (Arts, Social Science, Science or Engineering).

Notes

1. A working knowledge of elementary Biology is required for Geology 67.234* and 67.333*. This requirement may be fulfilled by credit for Grade 13 Biology, Biology 61.100, or 61.101 or, by arrangement with the instructor, for extra reading assignments in Geology 67.234*.
2. All Major and Honours students should note that their selection of Science courses, including Mathematics, should be made with the prerequisites for subsequent Geology courses in mind.
3. Many Fourth-year courses are given in alternate years only. Third-year students possessing prerequisites may be admitted to Fourth-year courses with the Department's permission; certain Fourth-year subjects are offered in the Department of Geology, University of Ottawa, in order to alternate with Carleton. In 1980-81 complementary Geology half-courses at the University of Ottawa, of which up to two may be taken, include:

First Term

Geology

4310 Paleoeology — O.A. Dixon

4320 Mineralogy IIa — D.D. Hogarth and others

Second Term

Geology

4311 Evolution and the Fossil Record — O.A. Dixon

4323 Radioactive Minerals and Occurrences — D.D. Hogarth

4345 Metamorphic Petrology II — R. Kretz

Honours Program

University requirements concerning Honours standing must be maintained. (See pp. 361-362.)

Honours in Geology

1. Courses as prescribed for the Major program are required, except that Geology 67.498 (Thesis) is one of the mandatory courses in Geology, and a course in Mathematics beyond First-year level, and/or Computer Science is mandatory in the group of six courses required in other sciences.
2. The departmental language requirement must be met during the Third year by passing a formal course in, or demonstrating reading proficiency in a language other than English.

Combined Honours in Biology and Geology

Program advisers are K. Hooper and H.F. Howden.

Students desiring a comprehensive basic training in both Biology and Geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be

of Honours standing and must have achieved grades of C+ or better in both Biology 61.100 and Geology 67.100.

Course requirements of the Combined Honours program are as below:

1. Biology 61.100†, Geology 67.100, Mathematics 69.107*, and 69.117* or 69.127*, Chemistry 65.100 or Physics 75.100 or 75.105 (the course omitted must have been passed at Grade 13 level).
2. Ten courses in Biology (or Biochemistry) and Geology beyond First-year level, including at least one course involving a field camp. Not more than six courses in this group should be taken in one department and not more than six may be 200-level courses.
3. Biology 61.498 or Geology 67.498.
4. One half course in Statistics and one half course in Computer Science.
5. Three optional courses, at least two of which must be acceptable in the Faculties of Arts or Social Sciences.
6. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German, Russian, Spanish, Italian, Latin, Greek, or any language acceptable to the Committee and in which suitable arrangements can be made for the examination.

†See also p. 367.

Combined Honours in Chemistry and Geology

Program advisers are C.L. Chakrabarti and D.H. Watkinson.

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Course requirements are as follows:

First Year

Chemistry 65.100;
Geology 67.100;
Mathematics 69.107* and 69.117*;
Physics 75.100;
One Arts or Social Science elective.

Second Year

Chemistry 65.210 and 65.250;
Geology 67.221*, 67.222*, 67.228* and 67.281*;
Mathematics 69.202.

Third Year

Chemistry 65.350;
Geology 67.323* and 67.324*;
One Chemistry or Geology option;
One Science elective;
One Arts or Social Science elective.

Fourth Year

Chemistry 65.498 or Geology 67.498;
 One Chemistry course at the 400 level;
 One Geology course at the 400 level;
 One Science elective;
 One open elective.

A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German or Russian.

Combined Honours in Geology and Physics

Program advisers are T.J.S. Cole and G. Ranalli.

A Grade of C+ or better in both Geology 67.100 and Physics 75.100 and overall Honours standing is required before admittance to the program. Course requirements are as follows:

First Year

Physics 75.100;
 Geology 67.100;
 Mathematics 69.107* and 69.117*;
 Chemistry 65.100;
 One Arts or Social Science elective.

Second Year

Physics 75.211*, 75.222*, 75.235* and 75.236*;
 Geology 67.221*, 67.222*, 67.228* and 67.281*;
 Mathematics 69.202.

Third Year

Physics 75.300, 75.361* and 75.362*;
 Geology 67.323*, 67.324* and 67.381*, 67.382*;
 One optional course.

Fourth Year

Physics 75.338*;
 One half-credit Physics course at the 400 level;
 Geology 67.481*;
 One half-credit Geology course at the 400 level;
 Physics 75.499 or Geology 67.498;
 One Arts or Social Science elective;
 One optional course.

A reading proficiency in French, German or Russian must be demonstrated in the Third year. Thesis must be presented and defended orally before an inter-departmental committee.

Graduate Courses

For information on graduate courses, please consult the Graduate Studies and Research Calendar.

Work-Study Program in Geology

This program allows students to gain professional experience while completing an academic degree. Admission to the program is permitted after completion of Geology 67.103* or the first half of Geology 67.100. Students will spend the First term of Second year and the Second term of Third year in off-campus jobs. The Department will assist students in locating jobs that are related to career opportunities in geology but the Department cannot guarantee that such jobs will be available. The program is governed by the same academic regulations as regular B.Sc. programs in Geology. A student may choose to graduate with a B.Sc. at the end of Year IV or may complete Year V for the B.Sc.(Hons.). A typical program is as follows:

Year I	Year II	Year III	Year IV	Year V
Study Period I (September-May) Geology 67.103* Geology 67.221* Chemistry 65.100 Mathematics 69.107* Mathematics 69.117* Elective course (Science or Engineering) Elective course (Arts or Social Science)	Work Period I (May-December)	Work Period II (May-August)	Work Period III (continues)	Honours year if desired or Year IV may be split as years II and III.
	Study Period II (January-May) • Geology 67.222* Geology 67.228* Geology 67.234* Two Electives	Study Period III (September-December) Geology 67.233* Geology 67.281* Geology 67.323* Geology 67.381* Elective	Study Period IV (September-May) Geology 67.324* Geology 67.333* Geology 67.334* Geology 67.382* 400 series Geology half-course Electives to complete degree requirements	
Engineering 82.104* (during May if possible)				

Program Advisers: G. Skippen, R. Yole

Courses Offered

Geology 67.100**General Geology**

The Earth as a planet; minerals, rocks, geological structures; resource geology, geological time, the development of the North American continent, the history of life.

Text: Gilluly, Waters and Woodford, *Principles of Geology, Fourth Edition*.

Reference text: Peterson, Rigby, and Hintze, *Historical Geology of North America*.

Credit is given for only one of Geology 67.111* and Geology 67.100.

Day division: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week, one or two field excursions during laboratory periods in the First term.

Evening division: Lectures and laboratory five hours a week, two half day field trips in the First term.

P.A. Hill, J.M. Moore

Geology 67.103***Principles of Geology**

The Earth as a planet; minerals, rocks, geological structures, geological time. Identical in course content to the first half of Geology 67.100. For students intending to enter the Work-Study Program in Geology.

Text: Gilluly, Waters and Woodford, *Principles of Geology, Fourth Edition*.

Day division, First term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week, two field excursions.

J.M. Moore

Geology 67.111***Geology, the Environment and Man I**

The Earth, man's habitat. Its formation and development. Processes shaping the environment. Earth materials.

Text: Gilluly, Waters, and Woodford, *Principles of Geology, Fourth Edition*.

Day division, Second term: Lectures two hours a week, laboratories, seminars and field trips three hours a week.

P.A. Hill

Geology 67.112***Geology, the Environment and Man II**

Earth resources. Conservation. Urban geology. Water supply. Geological hazards: prediction, prevention. Artificial openings and slopes. Pollution. Trace elements. Reclamation geology.

Prerequisite: Geology 67.100 or 67.111* or 67.201*.

Not offered 1980-81.

Geology 67.201***Geology for Engineers**

Principles of geology with emphasis on engineering aspects. This course open only to students in the Faculty of Engineering.

Day division, First term: Lectures two hours a week, laboratories three hours alternate weeks, two field excursions.

R.L. Brown

Geology 67.202***Non-Renewable Primary Resources**

Occurrence of metallic and non-metallic minerals, fossil fuels and construction materials. Energy resources. Resources of the oceans. Resource planning and management. Special emphasis on Canadian problems. May be taken as an open elective course by students majoring in geology.

Reference texts: Skinner, *Earth Resources*; Landsberg, *Resources in America's Future*; Geological Survey of Canada, *Geology and Economic Minerals of Canada, Fifth Edition*.

Day division, Second term: Lectures two hours a week, laboratory three hours alternate weeks.

F.K. North

Geology 67.204***Earth, Resources and Society**

The course is designed to enhance the students' appreciation of the resource basis of contemporary society, and to explain the role of the earth sciences in the forecasting and mitigation of natural disasters. The effects of geologic resources and events on the organization of society and on the evolution of international relations are examined. Topics covered in the lectures include: Non-renewable resources and the physical limits of a finite earth; energy, water and the human use of the oceans; earthquake prediction and control; volcanic eruptions; and several case histories. Students have the option to investigate and report on aspects of these problems which relate to their own disciplines.

Prerequisites: Intended for students with at least Second-year standing in the social sciences, humanities, or architecture. Open to Science students, but not as a Science Continuation Course. Not a Science credit for Geology students. First-year students may enrol with permission of the Department. No previous experience in geology is needed.

Reference Texts: Menard, *Geology, Resources and Society*; Kesler, *Our Finite Mineral Resources*; Bolt et al., *Geological Hazards*.

Evening division, First term: Lectures and seminars three hours a week.

G. Ranalli

Geology 67.221***Crystallography and Optical Mineralogy**

Morphological study and classification of crystals, principles of optical crystallography.

Prerequisite: Geology 67.100, 67.103*, 67.112* or 67.201*.

Texts: Bloss, *An Introduction to the Methods of Optical Crystallography*; Hurlbut and Klein, *Manual of Mineralogy, Nineteenth Edition*.

Day division, First and Second terms: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

G.Y. Chao

Geology 67.222*

Mineralogy

Introduction to crystal chemistry, X-ray techniques, physical mineralogy and systematic mineralogy.

Prerequisite: Geology 67.100 or 67.221*.

Texts: Hurlbut and Klein, *Manual of Mineralogy, Nineteenth Edition*; Deer, Howie and Zussman, *Introduction to the Rock-forming Minerals*.

Day division, Second term: Lectures two hours, tutorial one hour, laboratory three hours a week.

G.Y. Chao

Geology 67.228*

Petrology I

Introduction to the origin and classification of rocks. Optical properties of the rock-forming minerals. Petrographic techniques and principles of geochemistry.

Prerequisite: Geology 67.221*.

Texts: Heinrich, *Microscopic Identification of Minerals*; Hyndman, *Petrology of Igneous and Metamorphic Rocks*.

Reference texts: Krauskopf, *Introduction to Geochemistry*; Harker, *Petrology for Students*; Faul, *Ages of Rocks, Planets and Stars*.

Day division, Second term: Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

J.M. Moore

Geology 67.233*

Stratigraphy I

Principles of stratigraphy and sedimentology; sedimentary rocks. Geological framework of North America. One or more field excursions.

Prerequisite: Geology 67.100 or 67.112* or permission of the Department.

Text: Dott and Batten, *Evolution of the Earth, Second Edition*.

Reference text: Krumbein and Sloss, *Stratigraphy and Sedimentation, Second Edition*.

Day division, First term: Lectures two hours a week, laboratory three hours a week.

F.K. North

Geology 67.234*

Palaeontology I

Principles of palaeontology and palaeoecology; organic evolution of invertebrates and vertebrates; human palaeontology.

Prerequisite: Geology 67.100 or 67.112* or permission of the Department.

Reference text: Black, *The Elements of Palaeontology*.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

K. Hooper

Geology 67.281*

Field Geology I

Basic geological and geophysical methods applied to the field study of rocks. A mandatory 13-day field camp starting on September 4. Cost of long distance transportation (if applicable) and room and board relating to the field camp are borne by the student.

Prerequisite: Geology 67.100, 67.103* or 67.112*.

Day division, First term: Field camp, plus laboratory three hours a week.

J.A. Donaldson, G.B. Skippen, D.H. Watkinson, R.W. Yole

Geology 67.311*

Applied Environmental Geology

Geology in: land use analysis, urban development, foundation design, highway construction, underground transportation, slope stability, subsidence, reclamation, environmental geochemistry, pollution, waste disposal, flood control, resource use and management, the law.

Prerequisites: Geology 67.100, 67.103* or 67.112*, or permission of the Department.

Not offered 1980-81.

Geology 67.323*

Petrology II

Petrology of igneous and metamorphic rocks; one day-long field trip.

Prerequisites: Geology 67.221*, 67.222*, 67.228* and Chemistry 65.100.

Text: Hyndman, *Petrology of Igneous and Metamorphic Rocks*.

Reference texts: Gass et al., *Understanding the Earth*; Verhoogen et al., *The Earth*; Williams, Turner and Gilbert, *Petrography*.

Day division, First term: Lectures two hours a week, laboratory three hours a week.

Geology 67.324*

Mineral Deposits

Ore deposits, economic geology, applied geochemistry and groundwater geology. One day-long field trip.

Prerequisites: Geology 67.221*, 67.222*, 67.228* and Chemistry 65.100.

Text: Park and McDiarmid, *Ore Deposits*.

Reference texts: Bates, *Geology of Industrial Rocks and Minerals*; McDivitt, *Minerals and Men*.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

D.H. Watkinson

Geology 67.333*

Palaeontology II

More advanced treatment of invertebrate fossils; evolutionary palaeoecology; fossil plants.

Prerequisite: Geology 67.234*.

Day division, First term: Lectures two hours a week, tutorial one hour a week, laboratory two hours a week.
K. Hooper

Geology 67.334*

Stratigraphy II

Stratigraphic analysis; sedimentary environments; sedimentary tectonics; systematic historical geology of North America.

Prerequisite: Geology 67.233*.

Text: Dott and Batten, *Evolution of the Earth*.

Reference texts: Matthews, *Dynamic Stratigraphy*; Douglas (Ed.), *Geology and Economic Minerals of Canada*.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

R.W. Yole

Geology 67.381*

Structural Geology

The geometry of the earth's crust interpreted in the light of mechanical principles of deformation; rock mechanics; applications to geological mapping, exploration and resource development.

Prerequisite: Geology 67.281*.

Text: Hobbs, Means and Williams, *Introduction to Structural Geology*.

Day division, First term: Lectures two hours a week, laboratory three hours a week.

R.L. Brown

Geology 67.382*

Geophysics

Geodynamics and global geophysics; geophysical fields; plate tectonics.

Prerequisite: Geology 67.281*.

Reference Text: Bott, *The Earth*; Cox, *Plate Tectonics and Geomagnetic Reversals*.

Day division, Second term: Lectures two hours a week, laboratory three hours a week.

G. Ranalli

Geology 67.403*

Directed Studies in Geology

One or more special projects based on a total of at least fifteen days field research, laboratory investigations, or some combination of these components. Credit for field components may be accrued during the Third year of a student's program, but laboratory projects will be arranged during the Fourth year. Assessment to be based on written reports and oral examinations. Travel expenses for any long-distance travel to be borne by student.

Prerequisites: Honours standing and permission of the Department.

Day division, Second term.

J.A. Donaldson (co-ordinator)

Geology 67.415*

Quaternary Geography

Offered as Geography 45.411*.

Not offered 1980-81.

Geology 67.417*

Soil Mechanics

Offered as Engineering 82.424*.

Second term: Lectures two hours a week, problem analysis three hours alternate weeks.

Geology 67.419*

Hydrology

Offered as Engineering 82.331*.

Second term: Lectures and tutorials two hours a week.

Geology 67.421*

Ore Mineralogy

Structural principles, crystal chemistry and classification of ore-forming oxides, sulfides, sulfosalts, uranium and precious-metal minerals. Principles of ore microscopy, analytical and identification techniques.

Prerequisite: Geology 67.324*.

Day division, First term: Lectures, group discussions and laboratories five hours a week.

G.Y. Chao

Geology 67.422*

Metallic Mineral Deposits

Ore deposits studied from their relationships to the petrologic cycle. Ore genesis interpreted in light of field studies of local deposits, reflected light microscopy of ore suites, description of classic deposits, phase equilibria and isotopic evidence.

Prerequisite: Geology 67.324*.

Text: Stanton, *Ore Petrology*.

Day division, Second term: Lectures, seminars and laboratories five hours a week.

Geology 67.423*

Petroleum Geology

The origin and occurrence of oil and natural gas; oil exploration and production; petroleum provinces.

Prerequisite: Geology 67.334*.

Reference text: Levorsen, *Geology of Petroleum, Second Edition*.

Day division, Second term: Lectures, seminars and laboratory five hours a week.

R.W. Yole

Geology 67.427*

The Geology and Application of Coal

The origin, structure, petrography and terminology of coal. Coal fields of North America with special reference to Canada. The evaluation, analysis, testing and application of coals. Extraction, utilization and beneficiation. Pollution. Economics.

Prerequisite: Geology 67.334* or permission of the Department.

Not offered 1980-81.

Geology 67.428*

Property Valuation and Mineral Economics

Sampling, ore calculations, drilling and mining methods, property valuation, economics of specific mineral industries, national and international trade and mineral policies, taxation and financing of the mineral industry.

Prerequisite: Geology 67.324* or permission of the Department.

Texts: Parks, *Examination and Valuation of Mineral Property*; USBM, *Mineral Facts and Problems*; AIMME, *Economics of the Mineral Industries*.

Not offered 1980-81.

Geology 67.431*

Marine Geology and Microfossils

Oceanological and marine geological processes; micro-organisms of the oceans; microfossils: their evolution, biostratigraphic and palaeoecologic significance and economic use; microfaunal correlation in petroleum geology. Laboratory: Examination and identification of microfossils. Each student is required to present at least one seminar paper.

Prerequisite: Geology 67.234* or permission of the Department.

Reference texts: Cushman, *Foraminifera, their Classification and Economic Use*; Glaessner, *Principles of Micropalaeontology*.

Day division, First term: Lectures and laboratory five hours a week.

K. Hooper

Geology 67.442*

Advanced Structure

A study of the structural evolution of mountain belts, with emphasis on field methods.

Prerequisite: Geology 67.381*, 67.382*.

Text: Ramsay, *Folding and Fracturing of Rocks*.

Not offered 1980-81.

Geology 67.451*

Igneous Petrology

Genesis of plutonic and volcanic rocks, their spatial and petrochemical relationships and crust-mantle differentiation; associated problems in phase equilibria and isotopic studies. One-day field trip.

Prerequisite: Geology 67.323*.

Day division, First term: Lectures and laboratories five hours a week.

D.H. Watkinson

Geology 67.452*

Metamorphic Petrology

Field relations of metamorphic rocks; graphical treatment and interpretation of mineral assemblages. Laboratory: Petrographic techniques, study of suites; graphical and numerical problems.

Prerequisite: Geology 67.323*.

Text: Winkler, *Petrogenesis of Metamorphic Rocks, Fourth Edition*.

Reference text: Miyashiro, *Metamorphism and Metamorphic Belts*.

Not offered 1980-81.

Geology 67.463*

Sedimentology

Review of sedimentary processes. Composition, texture, primary structure and origin of the major sedi-

mentary rock types; dispersal patterns, sedimentary trends, and lithofacies. Laboratory: textural analyses, heavy minerals, statistical analysis of data, and thin-section petrography.

Prerequisite: Geology 67.323* or 67.334*.

Text: Selly, *Ancient Sedimentary Environments*.

Reference texts: Milner, *Sedimentary Petrography*; Pettijohn, Potter and Siever, *Sand and Sandstones*; Bathurst, *Carbonate Rocks and their Diagenesis*.

Not offered 1980-81.

Geology 67.464*

Precambrian Geology

Introduction to problems of the Precambrian, emphasizing both classical and current North American studies. Laboratory: research methods, field trips, petrologic studies of representative rock suites.

Prerequisite: Geology 67.324*.

Reference text: Geological Survey of Canada, *Geology and Economic Minerals of Canada, Fifth Edition*.

Day division, First term: Lectures and laboratories five hours a week.

J.A. Donaldson

Geology 67.481*

Physics of the Earth

The physical properties of the solid earth. Gravitational, magnetic and palaeomagnetic fields; seismology and earthquake occurrence; heat flow and thermal history. Geodynamic processes.

Prerequisites: Geology 67.381*, 67.382* or permission of the Department.

Text: Jacobs, *A Textbook on Geonomy*.

Reference texts: Cox, *Plate Tectonics and Geomagnetic Reversals*; Strangway, *History of the Earth's Magnetic Field*.

Day division, First term: Lectures and laboratories five hours a week.

G. Ranalli

Geology 67.482*

Geochemistry and Isotope Geology

Chemical evolution of the earth, meteoritics, development of the continental crust, origin of the atmosphere and hydrosphere, radiometric dating, stable isotopes, origin of life.

Prerequisite: Geology 67.323* and 67.324* or permission of the Department.

Texts: Ahrens, *Distribution of the Elements in Our Planet*; Faul, *Ages of Rocks, Planets and Stars*; Hoefs, *Stable Isotope Geochemistry*; Wood, *Meteorites and the Origin of Planets*.

Not offered 1980-81.

Geology 67.483*

Applied Geochemistry

Chemical and physical factors responsible for the distribution and migration of the elements in the lithosphere, hydrosphere, atmosphere and biosphere; geochemistry applied to mineral exploration; methods

of analysis. Laboratory: determination of trace amounts of the common metallic elements in soils and stream sediments; case histories, research problems, field trips.

Prerequisites: Geology 67.100 or 67.112*, and 67.228*, Chemistry 65.100, or permission of the Department. Text: Levinson, *Introduction to Exploration Geochemistry*.

Reference text: Hawkes and Webb, *Geochemistry in Mineral Exploration*.

Not offered 1980-81.

Geology 67.484*

Exploration Geophysics

An introduction to the fundamental theory and application of geophysics to economic and structural geology. Methods studied are electrical, gravitational, magnetic, radioactive and seismic. Case history studies integrate the application of the methods.

Prerequisite: Physics 75.100 or 75.105, or permission of the Department.

Reference texts: Dobrin, *Introduction to Geophysical Prospecting, Second Edition*; Jakosky, *Exploration Geophysics*; Parasnis, *Principles of Applied Geophysics*.

Day division, Second term: Lectures and problems three hours a week.

R.W. Stemp

Geology 67.487*

Field Geology II

A two-week field camp designed to develop the student's ability to observe, analyse and interpret geological field data in the light of theoretical and experimental knowledge. A written report including maps, sections and diagrams is submitted and defended in an oral examination. Near Calabogie and Kaladar, Grenville Province, May, 1981.

Prerequisite: Completion of the Geology core program or its equivalent.

Day division, First term.

R.L. Brown, J.M. Moore

Geology 67.498

Honours Thesis

The B.Sc. thesis is to be based on a study undertaken before or during the final University year, in the field and/or the Department. Before registering in the course, the student must first have obtained approval from the course co-ordinator, of the topic and a supervisor. The thesis is equivalent to one full course, with an average of eight hours work per week. It shall be defended orally; a final draft suitable for defence shall normally be submitted to the co-ordinator by the deadline for Second term assignments.

R.W. Yole (Co-ordinator)

Courses Planned for Evening Division, 1981-83

Evening Division 1981-82

67.100C, 67.204*, 67.427*.

Evening Division 1982-83

67.100C, 67.204*.

Integrated Science Studies

Members of the Committee

Office: Room 224, Herzberg Building

Chairman

D. Kessler (*Physics*)

Committee

D. Dale (*Mathematics*)

J. Kelly (*Psychology*)

J. Neilson (*Engineering*)

S. Peck (*Biology*)

M. Smith (*Geography*)

W. Tupper (*Geology*)

P.J.S. Watson (*Physics*)

R. Wightman (*Chemistry*)

General Information

The Committee arranges programs of integrated science studies designed for those students who wish to develop an understanding of Science and at the same time to develop an area of interest in the Humanities, Social Sciences or Engineering. The programs require that students go into an area of Mathematics, Physical Sciences, Environmental Sciences, Behavioural Sciences or Life Sciences to sufficient depth to have an understanding of its workings and significance. In the parallel studies outside the Faculty of Science, patterns of courses must be selected which give the student similar understanding. The Third year includes an interdisciplinary course. The program for each student is developed individually in consultation with the advisers of the Committee who will continue to supervise the progress of the student. An Honours program of integrated science studies is available under the supervision of the Committee. Further information may be obtained from the Chairman.

Course Requirements

First Year

The First-year program consists of five courses approved for a First-year Science program including (a) Mathematics 69.107*, and 69.117*. For those students whose major Science interests are in Biology or Geology, Mathematics 69.127* is acceptable in place of 69.117*; (b) two experimental Science courses chosen from Biology, Chemistry, Geology, Physics; (c) an Arts or Social Science elective; (d) one course from Science, Mathematics, Arts, Social Sciences or Engineering.

In establishing their First-year program, students should consult with the Chairman of the Integrated Science Studies program or a member of the committee to ensure that they register for appropriate courses.

Major Program

Although programs are planned and approved on an individual basis, the general framework of regulations is specified. Candidates in integrated science studies programs organized under the committee ordinarily take a total of fifteen courses, of which at least nine shall be selected from those offered in the Faculty of Science. At least six courses shall be selected above the 100 level in the Faculty of Science, including Integrated Science 60.399 and at least two more courses in the Faculty of Science at the 300 or 400 level. For this purpose the Technology, Society, Environment Studies courses 59.301 and 59.302 are considered non-Science rather than Science options in this program.

These courses, and their prerequisites, are designated the Science sequence. The course pattern must also include a non-Science area of at least three courses from outside the Faculty of Science to provide a subsidiary specialization. At least two courses must be selected from the Faculties of Arts or Social Sciences. No more than seven courses are to be selected at the 100 level. Essays or special projects may be required, to be submitted to an adviser or the Chairman of the Committee.

Honours Program

Programs must meet usual grade-point and credit standards for Honours (see p. 361). After First year Science, they must include nine Science courses above First year, including Integrated Science 60.498 (Honours Project), Integrated Science 60.399A* or 60.399B* (Independent Study), and four other Science courses from advanced (Third- and Fourth-year) offerings. Normally, at least one 400-level course apart from 60.498 is also included. These courses are designated the Science sequence. Additionally, the program must include a pattern of interrelated non-Science courses for a total of four credits.

Computer Science Specialization

One special program area for Integrated Science Studies is a program combining a Science sequence with Computer Science as an area outside the Science Faculty. Science sequences satisfying the Integrated Science Studies requirement may be developed in mathematical fundamentals related to computing or in a combination of Mathematics with Physics or other experimental sciences. The three-course non-Science sequence for the Pass degree or the four-course non-Science sequence for the Honours degree may be taken in the Computer Science program. For a Combined Major in Computer Science, a student must elect an additional Computer Science credit. For a Combined Honours program, a student must elect two additional Computer Science credits. (See p. 57.)

Graduation

To qualify for graduation a student must meet normal Science faculty requirements and have averages of C- or better in *both* the courses of the Science sequence and the courses in the non-Science sequence. Also, the last five courses taken for credit should include at least one from each of the Science and non-Science sequences.

To meet the requirements for the C- average in the Science and non-Science sequences stated above, only those courses in the sequences necessary to make up the required total for graduation need be counted. All obligatory courses must be counted. The general Science Faculty regulations apply for graduating "with distinction" (see p. 361).

Courses Offered

Integrated Science 60.399A* and 60.399B*

Independent Study

This course is mandatory for all Integrated Science students. The student must have the agreement of a member of the University faculty to supervise the project. The student is responsible for filing an outline of the proposed project (which includes an indication of the methods to be used, and which has been written in consultation with the adviser), with the Integrated Science Studies Chairman not later than three weeks after registration in the course. A final report must be prepared and submitted in two copies, one to the project adviser and one to the I.S.S. Chairman, by the last day of classes of the term in which the student is registered. This course is normally open only to Integrated Science Studies students. Students in other programs must demonstrate the integrative or interdisciplinary nature of their proposed study.

Prerequisite or co-requisite: At least one half course at the 300 level or better and permission of the Committee. First and Second terms.

Integrated Science 60.498

Honours Project

A project is carried out by the student in consultation with a faculty adviser. The project must be approved by the adviser's department and by the Chairman of the Integrated Science Studies program. A written outline of the proposed study, approved by the adviser, must be submitted to the I.S.S. Chairman not later than three weeks after registration in the course. A progress report must be submitted to the adviser and the I.S.S. Chairman by the first day of classes in the Second term. Three copies of the final written report shall be prepared and submitted by the last day of second term classes, one each for the project adviser, an Integrated Science Studies Committee member, and a third reader, who has some familiarity with the project area.

An oral report will normally be required at the conclusion of the project. The project is the equivalent of one full course, with an average of eight hours of work per week. An "In Progress" grade will not be given for work not meeting the deadlines except in unusual circumstances and with the approval of the Committee chairman. The fulfillment of these requirements is the responsibility of the student.

Interdisciplinary Courses

Arts and Social Sciences

Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of man and his attempts to understand himself and the world about him.

Prerequisite: First-year standing or higher.

Not offered 1980-81.

Humanities 10.200*

An examination of selected works illustrating various dominant views on the nature of man and his attempts to understand himself and the world about him in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1980-81.

Interdisciplinary 04.288

Introduction to Women's Studies

A survey course, designed to increase the student's understanding of the position of women in contemporary society. Instructors from a variety of disciplines offer an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society.

Evening division: Lectures three hours a week.

Interdisciplinary 04.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature as the paramount expression of the writer's concern with *la condition humaine*. Such themes as alienation, dread, subjectivity, freedom, authenticity, and death are explored in selected works by major authors, including Hölderlin, Leopardi, Kierkegaard, Dostoevsky, Nietzsche, Tolstoy, Rilke, Kafka, Conrad, Hesse, Ionesco, Beckett, Sartre and Camus. Attention is also given to the philosophic basis and literary antecedents of the existentialist posture. (Also listed as English 18.390.) All assigned readings will be in English.

Prerequisite: Permission of the Department.

Day division: Lectures and discussions three hours a week.

S.C. Russell

Science

Science 60.100

Man in His Environment

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. Included is a general description of the aims and methods of experimental science with an emphasis on environmental and ecological problems. The historical aspects of scientific discoveries are examined, particularly those that are influencing present society. Particular attention is directed to the interactions of science and society and to man's influence and impact on the natural environment. In a framework of the natural sciences, emphasis is on the limits of the natural systems in which man is a member.

Day division: Lectures three hours a week.

H.H.J. Nesbitt

Science 60.200*

Introduction to Scientific Computing

Also listed as Computer Science 95.103*. See p. 60.

Science 60.202*

Introduction to Computers

Also listed as Computer Science 95.102*. See p. 60.

Science 60.206*

Introduction to Data Processing

Also listed as Computer Science 95.104*. See p. 60.

Interdisciplinary Science 00.200

Physical Anthropology (Introduction to the Study of Prehistoric Man)

A course for undergraduates desirous of learning something of what science has to say concerning the history of man. No previous formal training in biology is necessary. Definition and divisions of anthropology; physical anthropology; history, prehistory, and the nature of an historical document; historical introduction to human paleontology; geological time; absolute, relative and conjectural chronology; the evolution of exact chronology; modern techniques. The biological definition of man; relevant comparative anatomy of modern man, the modern anthropoid, and known fossil man. The Australopithecus problem. The Pithecanthropus-Sinanthropus-Atlanthropus group. Heidelberg, Neanderthal, and Cro-Magnon man. The Palestine Group. The relevance of the theory of evolution in the comparative anatomy of these groups. The Teilhard de Chardin synthesis. Pre-historic sites; their occurrence, study and interpretation. Artifacts of fossil man, their nature, classification, and chronology. Prehistoric painting and sculpture. In lieu of essays and term papers students are required to submit a review of each of sixteen texts chosen from the list below. An announcement concerning (a) the spacing of the reviews and, (b) which of them are compulsory, will be made in class. This course is available as an option to

Second- and Third-year students only. For students registered in the Faculty of Science, available only as a free option.

Texts: Leakey, *Adam's Ancestors*; Brace, *The Stages of Human Evolution*; Ardrey, *African Genesis*; LeGros Clark, *Antecedents of Man*; *History of the Primates*; Kroeber, *Anthropology*; *Biology and Race*; Wendt, *In Search of Adam*; Oakley, *Man the Toolmaker*; Burkitt, *Old Stone Age*; Darwin, *Origin of Species*, McKern, editor, *Readings in Physical Anthropology*; Teilhard de Chardin, *The Phenomenon of Man*; Dart, *Adventures with the Missing Link*; Howells, *Evolution of the Genus Homo*; Braidwood, *Prehistoric Men*; Pfeiffer, *The Emergence of Man*; Pilbeam, *The Evolution of Man*; *The Ascent of Man*; Napier, *The Roots of Mankind*; Van-Lawick Goodall, *In the Shadow of Man*; Brothwell, *Digging up Bones*; Heizer, *Man's Discovery of His Past*; Vance Goodall, editor, *The Quest for Man*.
See also Biology 61.391*.

Technology, Society, Environment Studies

Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by two courses intended for Third-year students and organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, and the conserver society concept, and through team projects which bring together students working in different disciplines. The two courses are T.S.E. 59.301, Technology-Society Interaction; and T.S.E. 59.302, Interaction of Technological Society with the Natural Environment and its Resources. They are described on pp. 433-434.

Other Courses

African Studies, see p. 428.
Asian Studies, see p. 429.
Urban Studies, see p. 435.
Women's Studies, see p. 436.

Department of Mathematics and Statistics

Officers of Instruction

Chairman

K.S. Williams

Assistant Chairmen

K. Hardy (Undergraduate Studies)

L. Ribes (Graduate Studies)

Professor Emeritus

M.S. Macphail

Professors

P.R. Beesack

M. Chacron

M. Csorgo

D.K. Dale

D.A. Dawson

J.D. Dixon

V. Diab

F. Fiala

P. Mandl

L.D. Nel

F.H. Northover

M. Rahman

J.N.K. Rao

L. Ribes

E. Saleh

Helga H. Schirmer

W. Schneider

D.W. Sida

K.S. Williams

Associate Professors

W.H. Cunningham

R.M. Fischler

C.W.L. Garner

J.E. Graham

K. Hardy

A.B.M.L. Kabir

L.E. May

E.J. Norminton

J.N. Pandey

J.C. Poland

I. Pressman

B.M. Puttaswamaiah

A. Smith

P. Tan

G. Zelmer

Assistant Professors

Marianne Helfenstein

E. Hughes

M.J. Moore

Marion J. Watson

Instructor

A. Bose

Adjunct Professors

J.G. Debanné

M. Grmela

T. Hida

P. Revesz

Sessional Lecturers

Margaret Hurd

M. Joliat

B. Mortimer

K. Ng

R.L. Rosenberg

Ann Woodside

Types of Programs Available

Mathematics has been called the "Queen and Servant of the Sciences". It is studied both for its own intrinsic elegance and for its numerous applications in Computer Science, Economics, Linguistics, Operations Research, Physics and other fields of human endeavour.

The Department of Mathematics and Statistics offers a wide variety of programs ranging from those giving a strong training in pure Mathematics to those which are more "career-oriented". The Honours programs provide a firm foundation in Mathematics and form an excellent preparation for graduate studies. On the other hand, a student who wishes to prepare for a specific type of employment after a bachelors degree would be more interested in the career-oriented Mathematical Sciences programs (Pass or Honours) or in Combined Honours Programs in Mathematics and another discipline such as Computer Science or in the Honours Program in Operations Research. Enquiries for more details or advice are always welcome.

The Department offers Major and Honours Programs (B.A. and B.Sc.) in the following areas of specialization:

Pure Mathematics
Computer Mathematics
Statistics
Operations Research (Honours only)
Dynamical Systems

Placement in First-Year Mathematics Courses

All students wishing to enrol in a First-year Mathematics course are given a Placement Test, held either during the registration period or prior to it at times to be announced.

Students for whom the placement test reveals unacceptable weakness in basic skills are required to complete the pre-calculus half course Mathematics 69.106* in the First term before taking First-year calculus and/or algebra courses in the Second term.

Students for whom the requirement of the pre-calculus course Mathematics 69.106* is waived, normally make one of the following selections of First-year Mathematics courses:

(a) Mathematics 69.102 and 69.112 (Arts, Social Sciences and Science).

(b) First term: Mathematics 69.107*; Second term: Mathematics 69.127* (Commerce and Economics or other Arts or Social Sciences).

(c) First term: Mathematics 69.107*; Second term: Mathematics 69.117* (Science and Engineering).

(d) First term: Mathematics 69.107*; 69.117*; Second term: Mathematics 69.207*; 69.217* (Arts, Social Sciences and Science).

(e) First term: Mathematics 69.107*; Computer Science 95.103* (Science 60.200*); Second term: Mathematics 69.207* or 69.257*, 69.117* (Science).

Students who have already mastered the material of a course without formally holding credit for it, may apply to write an Advanced Placement Test in order to be exempted from it.

Note:

Students enrolling in First-year Mathematics courses except 69.141* must obtain approval from the Department.

Programs in Mathematics

The Major (B.Sc. and B.A.) programs emphasize methods and applications whereas the Honours (B.Sc. and B.A.) programs emphasize theoretical aspects and serve as an introduction to graduate studies. The main areas of concentration are Algebra, Analysis, Topology, Applied Mathematics (classical and modern), Statistics and Probability.

Major Programs: B.A. and B.Sc.

Students wishing to enter this program should apply for

Mathematics

A total of fifteen courses is required in accordance with the conditions given below. All course selections *must* be approved by the Department of Mathematics and Statistics. In certain cases the Department will permit a student to replace courses listed below by corresponding Honours courses.

Course Requirements

1. *Either*, Mathematics 69.102 and 69.112 with an average of C- or better; *or* Mathematics 69.107*, 69.117*, 69.207*, 69.217*, with an average grade in 69.107* and 69.117* of B- or better; *or* Mathematics

69.107*, 69.127*, 69.207*, 69.217* with an average grade in 69.107* and 69.127* of B- or better.

2. Mathematics 69.208*, 69.218*, 69.245*, 69.257*.

3. Three full-course equivalents in Mathematics selected from the range 69.304* to 69.387*, excluding 69.305*, 69.306*, 69.375* and 69.376*.

With permission of the Department, one or more of these courses may be replaced by a course in the 70 series at the Third-year level or a course at the 400 level, provided that of the total of three courses, not more than two are in the same area.

4. For B.A. Students:

Two courses numbered 200 or higher, chosen from any departments in the Faculties of Arts or Social Sciences.

For B.Sc. Students:

(a) In addition to the first year experimental science course, two Science continuation courses chosen from among those in Biology, Chemistry, Geology, Physics, Computer Science (except those cross-listed with Mathematics), Geography, Psychology and Technology, Society, Environment. Acceptable courses are listed on p. 358;

(b) Two Arts or Social Science electives.

5. The remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of fifteen courses, not more than seven may be below the 200 level.

Combined Major Programs: B.A.

Students wishing to enter this program should apply for

Mathematics and other Department

In general, the Mathematics requirements will be the same as those listed under sections 1, 2, and 3 of the B.A. Major program in Mathematics described above, except that the equivalent of only two full courses in 3 will be required instead of three. All such programs must be arranged in consultation with the Department of Mathematics and Statistics.

Honours Programs: B.A. and B.Sc.

Students wishing to enter this program should apply for

Mathematics

A total of twenty courses is required in accordance with the conditions given below. All course selections *must* be approved by the Department of Mathematics and Statistics.

Course Requirements

1. Either Mathematics 69.102 and 69.112 with an average of C+ or better; or Mathematics 69.107*, 69.117*, 69.207*, 69.217* with an average grade in 69.107* and 69.117* of B- or better; or Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in 69.107*, 69.127* of B- or better.
2. Mathematics 70.200, 70.210, 70.260.
3. (a) Mathematics 70.301*, 70.302*, 70.307*, 70.310, 70.495*; (b) Three additional half courses in Mathematics prefixed by 70 and numbered 300 or higher; (c) Three additional half courses in Mathematics prefixed by 70 and numbered 400 or higher.

Notes:

- (i) It is strongly recommended that both Mathematics 70.301* and 70.302* be taken in the Third year.
 - (ii) Mathematics 70.495* is the Honours Project in Mathematics. It consists of a written report on some approved topic or topics in the field of Mathematics together with a short lecture on the report. Each student should commence work on the project under a faculty supervisor before June 1 of the Third year. The first draft of this report must be submitted to a supervisor by November 1, and the final draft to the Department by January 15. Students who do not meet this latter deadline will be given the grade Abs.
4. For B.A. Honours Students:
Two courses numbered 200 or higher chosen from any department in the Faculties of Arts or Social Sciences.

For B.Sc. Honours Students:

- (a) In addition to the First-year experimental science course, two Science continuation courses chosen from among those in Biology, Chemistry, Geology, Physics, Computer Science (except those cross-listed with Mathematics), Geography, Psychology and Technology, Society, Environment. Acceptable courses are listed on p. 358; (b) Two Arts or Social Science electives.
5. The remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of twenty courses, not more than seven may be below the 200 level.

Combined Honours Programs: B.A. Honours

Economics and Mathematics

Students wishing to enter this program should apply for

Economics and Mathematics

Course Requirements

1. For Economics requirements see p. 133. With permission of the Department, 43.490 may be replaced by 43.575. Economics 43.420* and 43.421* are strongly recommended.

2. At least seven courses in Mathematics beyond the First year (if 69.102 and 69.112 or their equivalent were taken in First year) to include Mathematics 70.200, 70.210, 70.260, 70.301*, 70.302*, 70.350, one course in the 70.300-400 series and one course in the 70.400 series.
3. The comprehensive examination in Economics must be completed.
4. Each year's program must be determined in consultation with the two departments.

Mathematics and Philosophy

Students wishing to enter this program should apply for

Mathematics and Philosophy

Course Requirements

1. At least seven courses in Philosophy: an introductory course; 32.205, 32.215; 32.250 or 32.380; 32.335; one of 32.210 or 32.330 or another Philosophy course; one full course or the equivalent at the 400 or 500 level.
2. At least seven courses in Mathematics beyond First year (if 69.102 and 69.112 were taken in First year) to include Mathematics 70.200, 70.210, 70.260, 70.301*, 70.302*, 70.310, one course in the 70.300-400 series and one course in the 70.400 series.
3. Each year's program must be determined in consultation with the two departments.

Other Combined Programs

Students wishing to enter this program should apply for

Mathematics and other Department

Other Combined Honours programs such as German and Mathematics, Geography and Mathematics, are also available. Please consult the Department of Mathematics and Statistics for full details.

Normally, the following will be required:

Mathematics 69.102 and 69.112 (or their equivalent), 70.200, 70.210, 70.260, two of 70.301*, 70.302*, 70.307*, and three other courses at the 300 level or higher, at least one of which is at the 400 level.

Double Honours Program: B.Sc. Honours

Mathematics and Physics

Students wishing to enter this program should apply for

Mathematics and Physics

Entrance Criteria

Successful completion of First year with a B+ or better in Mathematics 69.102, 69.112 and Physics 75.100 or permission of both departments.

Course Requirements

First Year

- (a) Mathematics 69.102, 69.112 or their equivalent;
- (b) Physics 75.100;
- (c) Chemistry 65.100 or Biology 61.100;
- (d) One Arts or Social Science elective.

Note:

It is highly recommended that Computer Science 95.103* (60.200*) be taken in the First year in addition to the above courses.

Second Year

- (a) Mathematics 70.200, 70.210, 70.260;
- (b) Physics 75.211*, 75.222*, 75.235*, 75.342*;
- (c) one half Arts or Social Science elective.

Third Year

- (a) Mathematics 70.301*, 70.302*, 70.310;
- (b) Physics 75.307*, 75.338*, 75.361*, 75.362*;
- (c) Mathematics 70.345* or Physics 75.381*; a half course in Mathematics or Physics at the 300 level; Mathematics 70.307* together with Physics 75.388*, or Physics 75.386.

Fourth Year

- (a) One Mathematics course at the 400 level (or equivalent);
- (b) Physics 75.437*, 75.447*, 75.477*, 75.478*;
- (c) two half courses at the 300 or 400 level in Mathematics or Physics;
- (d) Honours project in Mathematics or Physics (half course);
- (e) one half Arts or Social Science elective.

Programs in Mathematical Sciences

These programs in Mathematics and Computer Science are designed for students who wish to prepare themselves for careers in government, industry, management, systems analysis, and related fields which employ mathematicians.

Major Programs: B.A. and B.Sc.

A total of fifteen courses, including a minimum of eight in Mathematics and Computer Science, is required in accordance with the conditions given below. Students may select courses in one of four streams: Computer Mathematics, Statistics, or Dynamical Systems. All course selections must be approved by the Department. In certain cases the Department will permit a student to replace courses listed below by corresponding Honours courses.

Requirements 1, 4, 5 and 6 are common to all four streams.

Course Requirements

1. Either Mathematics 69.102 and 69.112 with an average of C- or better; or Mathematics 69.107*, 69.117*, 69.207*, 69.217* with an average grade in Mathematics 69.107*, and 69.117* of B- or better; or Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in Mathematics 69.107* and 69.127* of B- or better.

Computer Mathematics

Students wishing to enter this stream should apply for *Mathematical Sciences (COMM)*

2. Mathematics 69.208*, 69.218*, 69.257*.
3. Mathematics 69.384*, 69.386*, 70.385* and one additional full course equivalent at the Third-year level.

Note:

For students in this stream Computer Science 95.202* is required. The Department recommends that the other Computer Science courses be selected from two half-courses at the 100 level (preferably Computer Science 95.102* and one of 95.103*, 95.105*) and 95.201*, 95.302*, 95.304*, 95.401*. (A knowledge of FORTRAN is required for some later courses.) Computer Science 95.101* is not acceptable in this program.

For Requirements 4, 5, 6: see below.

Statistics

Students wishing to enter this stream should apply for *Mathematical Sciences (STAT)*

2. Mathematics 69.208*, 69.257* and one of Mathematics 69.218*, 69.245*.
3. Mathematics 69.350, 69.351 and one additional half-course at the Third-year level.

For Requirements 4, 5, 6: see below.

Dynamical Systems

Students wishing to enter this stream should apply for *Mathematical Sciences (DSYS)*

2. Mathematics 69.208*, 69.245*, 69.257*.
3. Mathematics 69.345*, two of Mathematics 69.304*, 69.307*, 69.381* and the equivalent of an additional full course in Mathematics at the Third-year level.

For Requirements 4, 5, 6: see below.

4. (a) One full course equivalent at Second- or Third-year level chosen from Mathematics or Computer Science; (b) Two half courses from Computer Science, prefixed 95.

5. For Mathematical Sciences Students in the B.A. Program:

Two courses numbered 200 or higher, chosen from any departments in the Faculties of Arts or Social Sciences.

For Mathematical Sciences Students in the B.Sc. Program:

(a) In addition to the First-year experimental science course, two Science continuation courses chosen from those in Biology, Chemistry, Geology, Physics, Computer Science (except those cross-listed with Mathematics), Geography, Psychology and Technology, Society, Environment. Acceptable courses are listed on p. 358. Computer Science courses already chosen under requirement 4 above may be counted towards this requirement; (b) Two Arts or Social Science electives.

6. The remaining courses may be chosen from any departments, including Mathematics and Statistics, subject only to the restriction that of the total of fifteen courses, not more than seven may be below the 200 level.

Honours Programs: B.A. and B.Sc.

A total of twenty courses including a minimum of twelve in Mathematics and Computer Science are required in accordance with the conditions given below. Students may select courses in one of four streams: Computer Mathematics, Statistics, Operations Research and Stochastic Processes, or Dynamical Systems. All course selections must be approved by the Department of Mathematics and Statistics.

Requirements 1, 2, 6 and 7 are common to all streams.

Course Requirements

1. *Either* Mathematics 69.102 and 69.112 with an average of C+ or better; *or* Mathematics 69.107*, 69.117*, 69.207*, 69.217* with an average grade in 69.107* and 69.117* of B- or better; *or* Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in 69.107* and 69.127* of B- or better.

2. Mathematics 70.200, 70.210, 70.260. (Mathematics 70.200 may be replaced by Mathematics 69.208* and 69.309* in cases where Mathematics 69.107* was taken in the First year.)

Computer Mathematics

Students wishing to enter this stream should apply for *Mathematical Sciences (COMM)*

3. Mathematics 70.301*, 69.384*, all three of Mathematics 69.381*, 69.386*, 70.385*, *or* Mathematics 70.310 and one of 69.381* *or* 69.386*; at least one half course from 70.350, 70.355*, 70.356*; one additional half course from 70.302* *or* above, including 69.381* *or* 69.386*.

4. Mathematics 70.484*, 70.486*, 70.495*, one half course from 70.482*, 70.483*, 70.485*, *or* an approved half course from the 70.500 series.

5. (a) One full course equivalent in Computer Science prefixed 95, excluding Computer Science 95.101*; (b) One half course selected from Computer Science, (95 series) *or* from Mathematics (70 series *or* from 69.304*, 69.381*, 69.386*).

Note:

For students in this stream Computer Science 95.202* is required. The Department recommends that the other Computer Science courses be selected from among Computer Science 95.102*, 95.103*, 95.105*, 95.201*, 95.207*, 95.302*, 95.401*. (A knowledge of FORTRAN is required for some later courses.)

For Requirements 6, 7: See below.

Statistics

Students wishing to enter this stream should apply for *Mathematical Sciences (STAT)*

3. Mathematics 70.302*, 70.308*, 70.350, 70.355*, 70.356*, 69.381*.

4. Mathematics 70.450*, 70.495*, one half course from the range 70.451* to 70.458*, one additional half course in Mathematics at the 400 level *or* above.

5. (a) One full course equivalent in Computer Science prefixed 95, excluding 95.101*; (b) One half course selected from Computer Science, (95 series) *or* from Mathematics (70 series *or* from 69.384* *or* 69.386*).

For Requirements 6, 7: See below.

Operations Research and Stochastic Processes

Students wishing to enter this stream should apply for *Mathematical Sciences (ORSP)*

3. Mathematics 70.302*, 70.308*, 70.350, 70.356*, 69.381*, 69.386*.

4. Mathematics 70.458*, 70.495*, one half course from the range 70.451* to 70.457*, one additional half course in Mathematics at the 400 level *or* above.

5. (a) One full course equivalent in Computer Science prefixed 95, excluding 95.101*; (b) One half course selected from Computer Science, (95 series) *or* from Mathematics (70 series *or* 69.384*).

For Requirements 6, 7: See below.

Dynamical Systems

Students wishing to enter this stream should apply for *Mathematical Sciences (DSYS)*

3. Mathematics 70.302*, 70.307*, 70.308*, 70.345*, 70.346*, 70.356*, 69.381*.

4. Mathematics 70.446*, 70.470*, 70.495*, one additional half course in Mathematics at the 400 level *or* above.

5. (a) One full course equivalent in Computer Science prefixed 95, excluding 95.101*, (b) One half course selected from Computer Science, (95 series) or from Mathematics (70 series or from 69.384* or 69.386*).

For Requirements 6, 7: See below.

6. *For B.A. Honours Students:*

Two courses numbered 200 or higher chosen from any department in the Faculties of Arts or Social Sciences.

For B.Sc. Honours Students:

(a) In addition to the First-year experimental science course, two Science continuation courses chosen from among those in Biology, Chemistry, Geology, Physics, Computer Science, Geography, Psychology and Technology, Society, Environment. Acceptable courses are listed on p. 358; (b) Two Arts or Social Science electives.

7. The remaining courses may be chosen from any departments, including Mathematics and Statistics, subject only to the restriction that of the total of twenty courses, not more than seven may be below the 200 level.

Combined Programs with Computer Science

The Department of Mathematics and Statistics offers a wide variety of programs related to Computer Science. These include the following:

1. The Computer Mathematics stream in the Mathematical Sciences program (Major p. 397, Honours p. 398) which requires some courses in Computer Science, but is oriented more to Mathematics (including computer related courses);

2. The Combined Major and Honours programs in Mathematical Sciences and Computer Science (see below) which have the same Mathematics as in 1 but require more Computer Science courses;

3. The Combined Honours program in Computer Science and Mathematics (see below) which requires less 'non-computer related' Mathematics and more Computer Science than either of the Honours programs in 1 or 2.

Combined Major Programs with Computer Science

Mathematical Sciences and Computer Science (B.A. and B.Sc.)

Students wishing to enter this program should apply for

Mathematical Sciences and Computer Science Course Requirements

1. Either Mathematics 69.102 and 69.112 with an average of C- or better; or Mathematics 69.107*,

69.117*, 69.207*, 69.217* with an average grade in Mathematics 69.107* and 69.117* of B- or better; or Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in Mathematics 69.107* and 69.127* of B- or better.

2. Mathematics 69.208*, 69.218*, 69.257*;

3. Mathematics 69.384*, 69.386*, 70.385* and one additional full course equivalent in Mathematics at the Third-year level;

4. (a) One full course equivalent at Second- or Third-year level chosen from Mathematics or Computer Science;

(b) Two half courses from Computer Science prefixed 95;

5. (a) Two full course equivalents in Computer Science in addition to those in 4(b);

(b) Two Arts or Social Science electives (numbered 200 or higher for students in a B.A. program).

Note:

In satisfying requirements 4 and 5(a), two half courses in the 95 series at the 100 level (preferably Computer Science 95.102* and one of 95.103*, 95.105*), 95.202*, and three of 95.201*, 95.207*, 95.302*, 95.304*, 95.401* are required. (A knowledge of FORTRAN is required for some later courses.) Computer Science 95.101* is not acceptable in this program.

6. The remaining courses may be chosen from any departments, including Mathematics and Statistics, subject only to the restriction that of the total of fifteen courses, not more than seven may be below the 200 level.

Computer Science and Integrated Science Studies (B.Sc.)

Students wishing to enter this program should apply for

Integrated Science Studies

Students in the Faculty of Science may follow a Combined Major program in Computer Science and Integrated Science Studies which allows more options in Experimental Sciences than the Combined program with Mathematical Sciences. In this program students will select a three-course non-Science sequence from Computer Science. In addition, students will be required to make up from their electives an additional course in Computer Science.

Combined Honours Programs with Computer Science

Mathematical Sciences and Computer Science (B.A. and B.Sc.)

Students wishing to enter this program should apply for

Mathematical Sciences and Computer Science

Course Requirements

1. Either Mathematics 69.102 and 69.112 with an average of C+ or better; or Mathematics 69.107*, 69.117*, 69.207*, 69.217* with an average grade in Mathematics 69.107* and 69.117* of B- or better; or Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in Mathematics 69.107* and 69.127* of B- or better;

2. Mathematics 70.200, 70.210, 70.260 (Mathematics 70.200 may be replaced by Mathematics 69.208* and 69.309* in cases where Mathematics 69.107* was taken in the First year);

3. Mathematics 70.301*, 69.384*; all three of 69.381*, 69.386*, 70.385* or 70.310, and one of 69.381*, 69.386*; at least one half course from 70.350, 70.355*, 70.356*; one additional half course from 70.302* or higher, including 69.381* or 69.386*;

4. Mathematics 70.484*, 70.486*, 70.495*, one half course from 70.482*, 70.483*, 70.485*, or an approved half course from the 70.580 series;

5. (a) One full-course equivalent in Computer Science prefixed 95, excluding 95.101*;

(b) One half course selected from Computer Science, (95 series) or from Mathematics (70 series or from 69.304*, 69.381*, 69.386*);

6. (a) Two full-course equivalents in Computer Science;

(b) Two Arts or Social Science electives (numbered 200 or higher for students in a B.A. program).

Note:

In satisfying requirements 5 and 6(a), the courses Computer Science 95.102* and one of 95.103*, 95.105* are suggested; 95.202* and three of 95.201*, 95.207*, 95.302*, 95.401* are required. (A knowledge of FORTRAN will be necessary for some later courses.)

7. The remaining courses may be chosen from any departments, including Mathematics and Statistics, subject only to the restriction that of the total of twenty courses not more than seven may be below the 200 level.

Computer Science and Integrated Science Studies (B.Sc.)

Students wishing to enter this program should apply for

Integrated Science Studies

Students in the Faculty of Science may follow a Combined Honours program in Computer Science and Integrated Science Studies, which allows more options in Experimental Sciences than the Combined program with Mathematical Sciences. In this program, students will select a four-course non-Science sequence from Computer Science. In addition, students will be required to make up from their electives two additional courses in Computer Science.

Computer Science and Mathematics (B.Sc.)**Numerical Methods Option**

Students wishing to enter this option should apply for *Computer Science and Mathematics (NUM)*

Course Requirements

1. Mathematics 69.102, 69.117*, Computer Science 95.102*, 95.105*, 95.106*;

2. Mathematics 69.208*, 69.217*, 70.260, Computer Science 95.202*, 95.203*, 95.204*, and one of 95.206*, 95.207*;

3. Mathematics 69.309*, 69.311*, 69.381*, 69.384*, 70.385*, 69.386*, Computer Science 95.304*;

4. Mathematics 69.387*, 70.484*, 70.486*, Computer Science 95.401*, 95.480*, 95.495*, and three half courses in Science or Computer Science;

5. Two Arts or Social Science electives.

6. The remaining three courses may be chosen from any departments, including Mathematics and Statistics, subject to the restrictions that one must be a First-year experimental science and that of the total of twenty courses, not more than seven may be below the 200 level.

Statistical Methods and Operations Research Option

Students wishing to enter this option should apply for *Computer Science and Mathematics (SMOR)*

Course Requirements

1. Mathematics 69.102, 69.117*, Computer Science 95.102*, 95.105*, 95.106*;

2. Mathematics 69.217*, 69.257*, 70.200, Computer Science 95.202*, 95.203*, 95.204* and one of 95.206*, 95.207*, 95.291*;

3. Mathematics 69.311*, 70.350, 69.384*, 70.385*, one of 69.351 or 70.355*, Computer Science 95.304*;

4. Two half courses in Statistics at the 300 level or higher (three if Mathematics 69.351 not selected in 3), two of Mathematics 69.386*, 70.484*, Computer Science 95.405*, 95.480*, Computer Science 95.401*, 95.495*, and two Computer Science half courses at 200 level or above.

5. Two Arts or Social Science electives.

6. The remaining three courses may be chosen from any departments, including Mathematics and Statistics, subject to the restrictions that one must be a first year experimental science and that of the total of twenty courses, not more than seven may be below the 200 level.

Mathematics and Computing Theory Option

Students wishing to enter this option should apply for *Computer Science and Mathematics (MCT)*

Course Requirements

1. Mathematics 69.102, 69.117*, Computer Science 95.102*, 95.105*, 95.106*;
2. Mathematics 69.208*, 69.217*, 69.257*, 69.311*, Computer Science 95.202*, 95.203*, 95.204*, and one of 95.206*, 95.207*;
3. Mathematics 69.309*, 70.310, 69.384*, 69.386*, Computer Science 95.304*;
4. Mathematics 70.484*, 70.485* one of Mathematics 70.482*, 70.483*, 70.486*, Computer Science 95.401*, 95.495*, one of Computer Science 95.302*, 95.480* and four half courses from Mathematics or Computer Science at the 200 level or above;
5. Two Arts or Social Science electives.
6. The remaining three courses may be chosen from any departments, including Mathematics and Statistics, subject to the restrictions that one must be a First-year experimental science and that of the total of twenty courses, not more than seven may be below the 200 level.

Note:

For details of the Bachelor of Computer Science (B.C.S.) program see p. 55.

Operations Research

Operations Research is the generic name given to a wide range of activities associated with planning and decision making. The techniques used are many and varied. They include optimization, statistical analysis, stochastic processes and computer simulation.

The following program, while giving a strong base in all these techniques, exposes the student to various applications, including Economics and Management Studies.

B.A. and B.Sc. Honours (Operations Research)

The admission requirements for this program are as specified for the B.A. Honours program, p. 91 and the B.Sc. Honours program, p. 356.

A total of twenty courses is required in accordance with the conditions below. All course selections must be approved by the Department.

Course Requirements

1. Either Mathematics 69.102 and 69.112 with an average of C+ or better; or Mathematics 69.107*, 69.117*, 69.207*, 69.217* with an average grade in 69.107* and 69.117* of B- or better; or Mathematics 69.107*, 69.127*, 69.207*, 69.217* with an average grade in 69.107* and 69.127* of B- or better;

2. Mathematics 70.200, 70.260; 69.259* or 69.352*;
3. Mathematics 70.350, 70.356*, 69.311*, 69.386*, 69.387*, 69.381* or Economics 43.404*;
4. Mathematics 70.355* or 70.453*, 70.459*, 70.495*; 70.583* or Economics 43.405*;
5. Two introductory half courses in Computer Science, preferably 95.103*, 95.104*. Computer Science 95.310*, 95.405* are required;
6. Five approved full course equivalents in applications oriented areas. At least two and one-half of these should be in Economics and Management Studies. At least two half courses must be taken each year. For B.Sc. Honours students two of these must be Arts or Social Science electives.

Suitable courses include:

Management Studies

- 42.208* Marketing
- 42.250* Business Finance
- 42.290* Business Information Systems
- 42.291* Quantitative Applications of Computer in Business
- 42.310* Administrative Processes
- 42.311* Organizational Behaviour
- 43.357* Industrial Relations

Economics

- 43.100 Introduction to Economics
- 43.365* Economics of Planning
- 43.405* Econometrics

Accounting

- 41.101* Financial Accounting
- 41.102* Management Accounting
- 41.325* Cost Accounting

Geography

- 45.340 Advanced Economic Geography
- 45.442* Transportation Geography
- 45.443* Issues in Applied Economic Geography

Psychology

- 49.210* Social Psychology
- 49.340 Personnel Psychology

Sociology

- 53.246* Industrial Sociology
- 53.355 Complex Organizations

Philosophy

- 32.284* Society, Value and Technology

Technology, Society, Environmental Studies

- 59.301 Technology-Society Interaction

7. The remaining three courses may be chosen from any department, including Mathematics and Statistics, subject only to the restrictions (a) that of the total of twenty courses, not more than seven may be below the 200 level;

(b) that for B.Sc. students a First-year experimental science course must be included.

Summary of Major Programs

Three Year Pass Program: B.A. or B.Sc. (Mathematics)

(Note: Only Mathematics requirements are shown.)

First and Second Years	69.107*, 69.117* (or 69.127*) 69.207*, 69.217*	OR	69.102 and 69.112
Second Year	69.208*, 69.218*, 69.245*, 69.257*		
Third Year	Three Mathematics courses at the Third-year level		

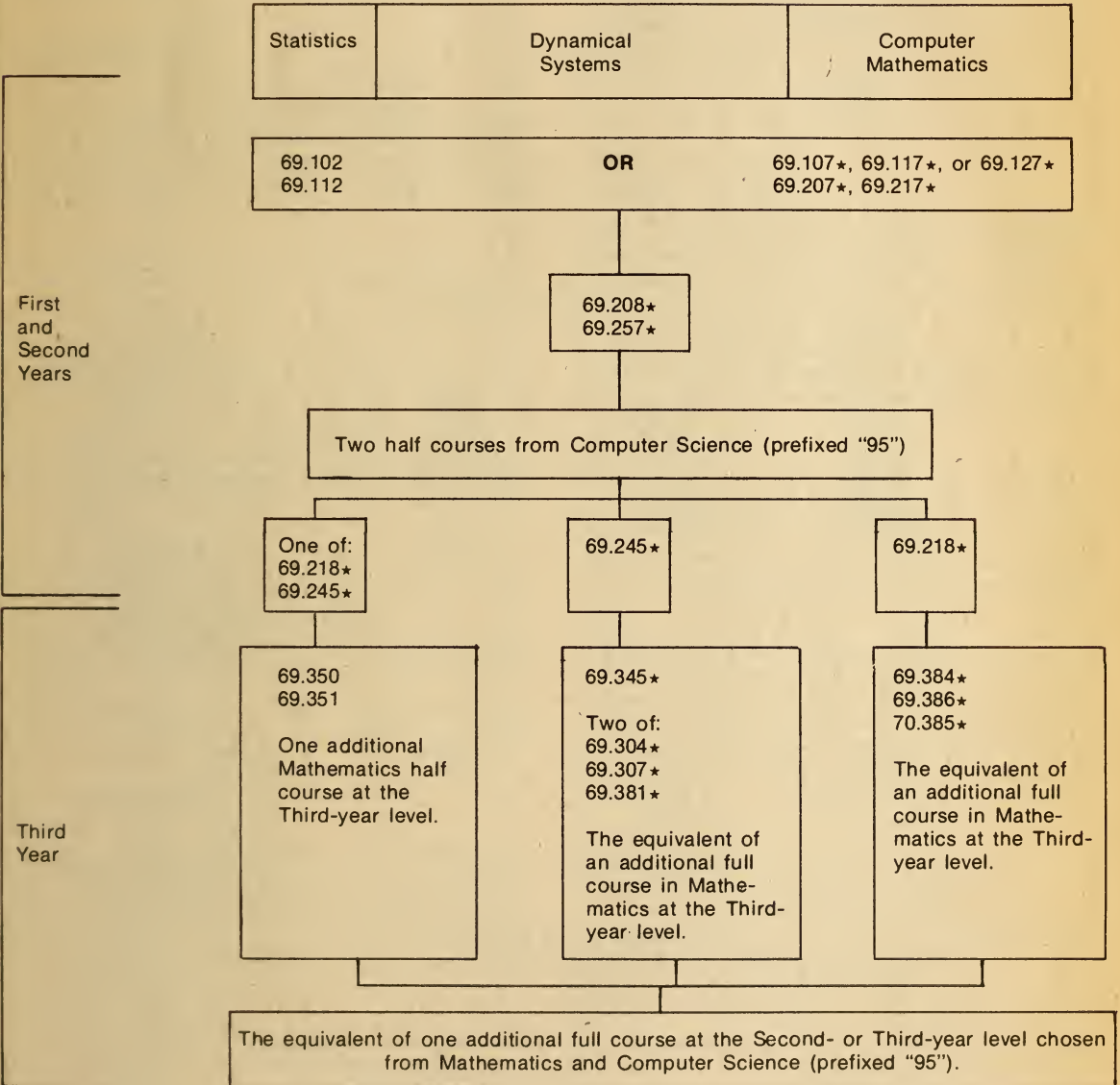
Summary of Honours Programs

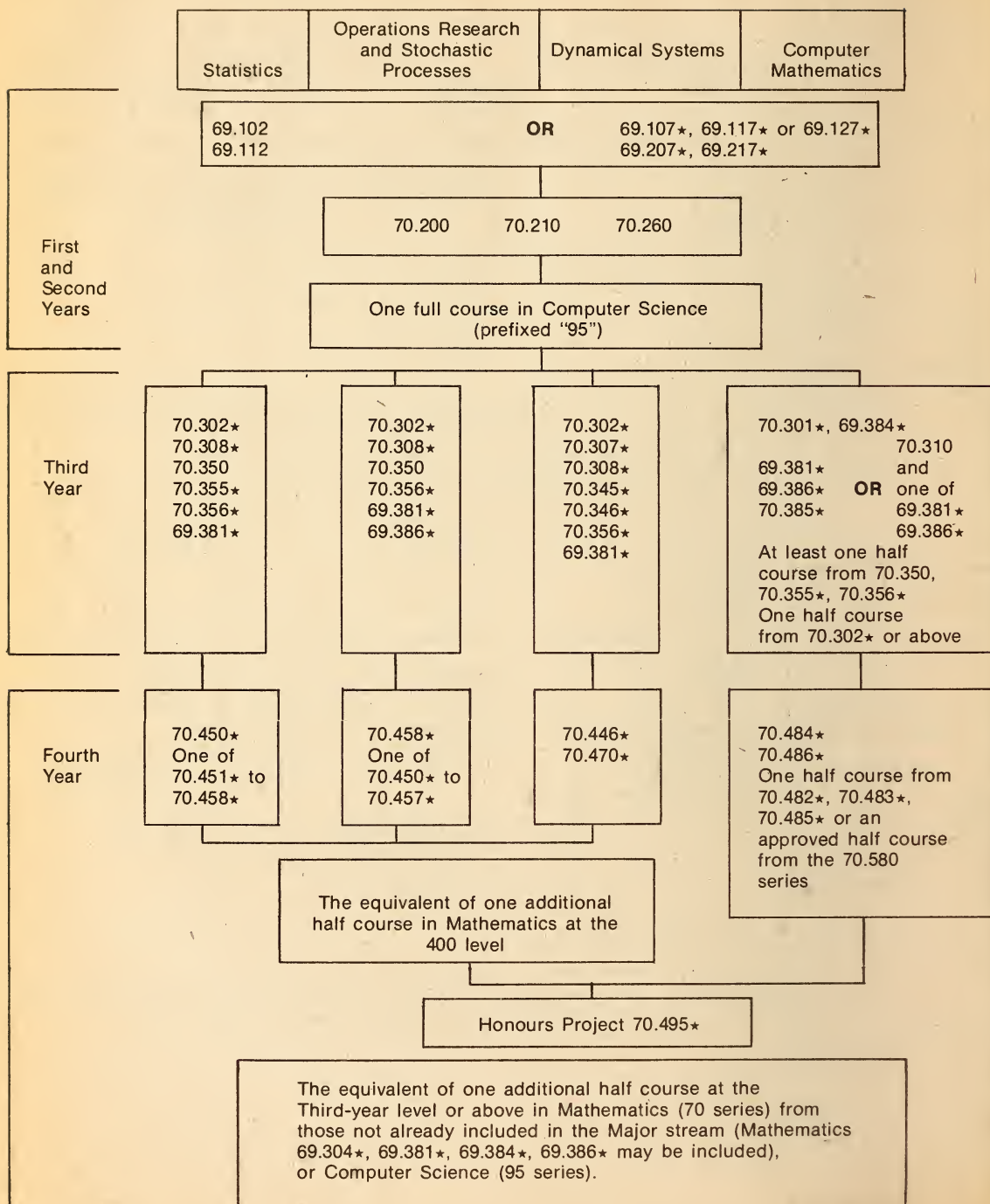
Four Year Honours Program: B.A. or B.Sc. (Mathematics)

(Note: Only Mathematics requirements are shown.)

First Year	69.102 and 69.112	69.107* and 69.117*
Second Year	70.200, 70.210, 70.260	69.207*, 69.217* Two of: 70.200, 70.210, 70.260
Third and Fourth Years	70.301*, 70.302*, 70.307*, 70.310 1½ Mathematics courses (70 series) at the 300 or 400 level 1½ Mathematics courses (70 series) at the 400 level 70.495* Honours Project	Remaining courses from 70.200, 70.210, 70.260. 70.301*, 70.302*, 70.307*, 70.310. 1½ Mathematics courses (70 series) at the 300 or 400 level 1½ Mathematics courses (70 series) at the 400 level 70.495* Honours Project

Three Year Pass Program: B.A. or B.Sc. (Mathematical Sciences)
 (Note: Only Mathematics and Computer Science requirements are shown.)





Graduate Programs: M.Sc. and Ph.D.

For requirements for graduate degrees, see the Graduate Studies and Research Calendar.

Course Numbering

Course numbers prefixed by 70 indicate courses intended primarily for Honours students; all other courses have numbers prefixed by 69. Credit will not be given for two courses having the same number but different prefixes.

Courses Offered

Mathematics 69.006*

Functions and Relations

Functions, conic sections, translations in the plane, trigonometry.

Prerequisites: Grade 12 Mathematics.

Day and Evening divisions, First term; Evening division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.007*

Introductory Calculus

Sequences, series, limits and continuity, derivatives, anti-derivatives and their applications.

Prerequisites: Mathematics 69.006* or equivalent; may be taken concurrently with the permission of the Department.

Evening division, First term; Day and Evening divisions, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.102

Calculus

Functions, limits, derivatives, differentiation and applications, the definite integral, special functions, techniques of integration (including partial fractions), parametric equations, improper integrals, l'Hôpital's rules, sequences and series, Taylor's formula and series, differential equations. This course is intended for students who wish to enter a Major or Honours program in Mathematics.

Prerequisite: Grade 13 Mathematics: Functions and Calculus, and *either* a satisfactory performance in the relevant placement test *or* Mathematics 69.106*.

Precludes additional credits for Mathematics 69.107*, 69.127*, 69.131*, 69.207* and Architecture 79.101*. Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.106*

Pre-Calculus Mathematics

Elementary algebra and mathematical logic, exponent rules and logarithms, substitution rules and the concept of function, extensive discussion of linear and quadratic functions, graphs of polynomials and simple rational functions, factor theorem, the circle, trigonometric functions.

Prerequisite: Grade 13 (Functions).

Day and Evening divisions, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.107*

Elementary Calculus I

Functions, limits, derivatives, differentiation and applications, special functions, the definite and indefinite integral and techniques of integration.

Prerequisites: Grade 13 Functions and Calculus and *either* a satisfactory performance in the relevant placement test *or* Mathematics 69.106*.

Precludes additional credit for Mathematics 69.102. Day and Evening divisions, First and Second terms: Lectures three hours a week and one hour tutorial.

Mathematics 69.112

Algebra

Fields, complex numbers, vector algebra and geometry in 2 and 3 dimensions, matrix algebra, linear dependence, bases, linear transformations, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem. This course is intended for students who wish to enter a Major or Honours program in Mathematics.

Prerequisites: Grade 13 Mathematics: Functions and Calculus and *either* a satisfactory performance in the relevant placement test *or* Mathematics 69.106*. Precludes additional credit for Mathematics 69.117*, 69.127*, 69.132*, 69.217* and Architecture 79.201*. Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.117*

Elementary Algebra

Complex numbers, vector algebra and geometry in two and three dimensions, matrix algebra.

Prerequisites: Grade 13 Functions and Calculus and *either* a satisfactory performance in the relevant placement test *or* Mathematics 69.106*.

Precludes additional credit for Mathematics 69.112, 69.127*.

Day and Evening divisions, First and Second terms: Lectures three hours a week, tutorial one hour a week.

Mathematics 69.127*

Topics in Calculus and Algebra

Vector algebra and geometry in two and three dimensions, matrix algebra. Partial differentiation.

Prerequisite: Mathematics 69.107* (may be taken concurrently).

Precludes additional credit for Mathematics 69.112, 69.117*.

Day and Evening divisions, Second term: Lectures three hours a week, tutorial one hour a week.

Mathematics 69.131*

Mathematics in Architecture 1

Offered in the School of Architecture as Architecture 79.101*.

Mathematics 69.132*

Mathematics in Architecture 2

Offered in the School of Architecture as Architecture 79.201*.

Not offered 1980-81.

Mathematics 69.141*

Gambling I

History of gambling. Blackjack, craps, poker, horse-racing, roulette, backgammon, bookmaking and stock market. Detection of methods of cheating. Intended primarily for students *not* majoring in Mathematics. Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.142*

Gambling II

A deeper mathematical investigation into some of the topics covered in Mathematics 69.141*, plus the topics of game theory and gamblers' ruin formulas. Statistical methods for detecting cheating. Some discussion also of the psychology and sociology of gambling. Intended primarily for students *not* majoring in Mathematics. Prerequisites: Grade 13 Mathematics (or equivalent) and Mathematics 69.141*.

Not offered 1980-81.

Mathematics 69.201

Intermediate Calculus

Differential calculus of functions of several variables, multiple integration, elements of infinite series, complex numbers, differential equations. Intended for Engineering students.

Prerequisites: Mathematics 69.117* or 69.127* (may be taken concurrently) and 69.107*.

Precludes additional credit for Mathematics 69.202, 69.203, 69.207*, 69.208*, 70.200.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.202

Intermediate Mathematics

Partial differentiation, infinite series, multiple integration, differential equations, Fourier series, introduction to matrix and eigenvalue problems. Intended for Science students.

Prerequisites: Mathematics 69.107*, and 69.117* or 69.127*.

Precludes additional credit for Mathematics 69.201, 69.203, 69.207*, 69.208*, 70.200.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.203

Intermediate Mathematics

Vectors, functions of two variables, sequences and series, elementary complex variable; ordinary differential equations. Intended for Science students.

Prerequisite: Mathematics 69.107* or permission of the Department.

Precludes additional credit for Mathematics 69.201, 69.202, 69.207*, 69.208*, 70.200.

Not offered 1980-81.

Mathematics 69.207*

Elementary Calculus II

Further techniques of integration, improper integral, polar coordinates, parametric equations, indeterminate forms, sequences and series, Taylor's formula and series, first order and linear differential equations. Prerequisite: Mathematics 69.107*.

Precludes additional credit for Mathematics 69.102, 69.201, 69.202, 69.203.

Day division, First term and Evening division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.208*

Intermediate Calculus

Partial differentiation, chain rule, gradient, line and multiple integrals with applications, transformations, implicit and inverse function theorems.

Prerequisites: Mathematics 69.102, or 69.107* and 69.117* and 69.207*.

Precludes additional credit for Mathematics 69.201, 69.202, 69.203, 70.200.

Day division, First term and Evening division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.217*

Linear Algebra.

n-dimensional vector spaces, linear dependence and bases, linear transformations and matrices, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem.

Prerequisite: Mathematics 69.117* or 69.127*.

Precludes additional credit for Mathematics 69.112.

Day division, First term and Evening division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.218*

Introductory Abstract Algebra

Sets and relations, number theory, group theory, ring theory, cardinal numbers.

Prerequisites: Mathematics 69.112 or 69.217*.

Precludes additional credit for Mathematics 70.210.

Day division, First term and Evening division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.245***Dynamical Systems I**

Introduction to one and two-dimensional Newtonian mechanics of a particle. Conservation laws. Simple harmonic motion and other solvable problems in rectilinear motion. Central forces and general particle motion in a plane. Difference equations and applications to biological systems. Application of differential equations to population problems.

Prerequisites: Mathematics 69.102 and 69.112 (or 69.117* and 69.207*).

Precludes additional credit for Mathematics 70.260.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.250**Introduction to Statistical Analysis**

Frequency distributions; moments; measures of central tendency, dispersion, skewness; probability; distributions (binomial, Poisson, normal, z , t , F , χ^2); statistical inference, confidence intervals; experimental designs (randomized block, Latin square); enumeration statistics; least squares analysis, introduction to correlation and regression analysis; non-parametric tests. (BASIC programming.) Intended for non-Mathematics students.

Prerequisite: Mathematics 69.007*.

Precludes additional credit for Mathematics 69.257*, 69.258*, 70.260, Economics 43.220, Geography 45.201*, Psychology 49.205*.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.257***Introduction to Statistics**

Data analysis; introduction to probability theory; some standard discrete and continuous distributions such as the binomial, Poisson, hypergeometric, normal, t , and chi-square; their application to interval estimation and significance testing; simple linear regression and correlation, contingency tables; testing for goodness-of-fit. Computational aspects of statistics. (Instruction in a computer language is provided for students who do not have computer training.)

Prerequisites: Mathematics 69.107* and 69.117* or their equivalent. May be taken concurrently.

Precludes additional credit for: Mathematics 69.250, 69.258*, Economics 43.220, Geography 45.201*, Psychology 49.205*.

Evening division, First term and Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.259***Applied Statistics**

Descriptive statistical methods and exploratory data analysis, matrix methods in statistics, analysis of variance, regression analysis, experimental design, elements of survey sampling, use of SPSS computing package.

Prerequisite: Mathematics 69.257*, 69.250, or 70.260.

Precludes additional credit for Mathematics' 69.352*.

Not offered 1980-81.

Mathematics 69.304***Boundary Value Problems**

Differential equations; solution in series; the formulation of boundary value problems in mechanics, heat conduction, etc.; the method of separation of variables; eigenfunctions and eigenvalues; Fourier series; Bessel and Legendre functions and applications; Laplace transforms.

Prerequisite: Mathematics 69.201, 69.202, 69.203, or 69.208*.

Precludes additional credit for Mathematics 69.306* or 69.375*.

Evening division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.307***Functions of a Complex Variable**

Analytic functions, contour integration, residue calculus, conformal mapping. Intended for non-Engineering students.

Prerequisite: Mathematics 69.201, 69.202, 69.203 or 69.208*.

Precludes additional credit for Mathematics 69.305*, 69.376* or 70.307*.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.309***Topics in Analysis**

The real number system, sequences and series, functions of a single real variable, derivatives, the definite integral, uniform convergence.

Prerequisite: Mathematics 69.201, 69.202, 69.203 or 69.208*.

Precludes additional credit for Mathematics 70.200.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.310**Applied Algebra**

Similarity of matrices, Jordan form, spectral decomposition, Markov chains, systems of differential and difference equations, quadratic forms, symmetric operators, Rayleigh-Ritz principle. Generalized inverse and applications to statistics; least-squares with applications to Fourier series; factorizations over classical number systems; finite field extensions with applications including Latin squares, error correcting codes; Boolean rings with applications to logic and switching circuits.

Prerequisites: Mathematics 69.217* and 69.218* or permission of the Department.

Precludes additional credit for Mathematics 70.210 or 70.310.

Not offered 1980-81.

Mathematics 69.311***Algebraic Structures with Computer Applications**

Introduction to algebraic structures: groups, rings, fields, lattices, and Boolean Algebras; with applications of interest to students in computer science. This

course is intended primarily for students in the Computer Science programs and the Operations Research program.

Prerequisites: Mathematics 69.217* and one of Computer Science 95.201*, 95.202* or 95.207* or permission of the Department.

Precludes additional credit for Mathematics 69.218*. Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.325*

Euclidean Geometry and its Groups

Transformations of the Euclidean plane (isometries, similarities); solutions of geometric problems using these transformations; groups of symmetries of finite plane figures, frieze patterns, and regular polyhedra; inversion and the extension to the inversive plane; problems solved using inversion; orthogonal circles and pencils of coaxial circles.

Prerequisite: Mathematics 69.218*.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.326*

Plane Projective Geometry

Axioms of Desarguesian geometry, principle of duality; projectivities, perspectivities, and the fundamental theorem; collineations (homologies and elations); correlations (polarities and conics); algebraic model; introduction to finite projective planes.

Prerequisite: Mathematics 69.218*.

Precludes additional credit for Mathematics 70.326*. Not offered 1980-81.

Mathematics 69.335*

Introduction to the Theory of Numbers

Euclidean algorithm, unique factorization theorem, linear diophantine equations, congruences, Fermat and Wilson theorems, primitive roots, quadratic residues, arithmetic functions, sums of squares, Pell's equation, rational approximation to real numbers.

Prerequisite Mathematics 69.218*.

Not offered 1980-81.

Mathematics 69.345*

Dynamical Systems II

System of particles, collision problems; general equations and applications. Lagrange's equations, small oscillation theory. Rotating coordinate systems, applications to motion near the earth. Motion of tops, gyrocompass. Introduction to stability theory with ecological and other applications.

Prerequisites: Mathematics 69.208* and 69.245*.

Precludes additional credit for Mathematics 70.345*.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.350

Statistical Theory

Discrete and continuous distributions: moment generating functions, marginal and conditional distributions, transformation theory, limiting distributions; point and interval estimation, hypothesis testing, chi-square tests with enumeration data; linear models.

Prerequisites: Mathematics 69.208* (or 69.201, or 69.202 or 69.203) and one of 69.250, 69.257*, 69.258*, Economics 43.220 or permission of the Department.

Precludes additional credit for Mathematics 70.350. Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.351

Statistical Methods

Statistical preliminaries; simple and multiple regression techniques; correlation analysis; design of experiments including the completely randomized, randomized block, Latin square designs; factorial treatment structures; the analysis of covariance; non-parametric methods, related topics.

Prerequisites: Mathematics 69.257* or 69.258* or an introductory statistics course, together with Mathematics 69.107* and 69.117*.

Precludes additional credit for Mathematics 70.355*. Day division: Lectures three hours a week and one hour tutorial.

Mathematics 69.352*

Engineering Statistics

Displays and summaries, normal, t, chi-square and F distributions, maximum likelihood estimation, confidence intervals and tolerance limits, Bayesian approach, hypothesis testing, chi-square goodness of fit, and testing independence in contingency tables. Engineering applications: acceptance sampling, quality control charts, life testing and statistical reliability. Simple and multiple regression.

Prerequisite: Engineering 94.265*.

Precludes additional credit for Mathematics 69.257*, 69.258*, 69.259*, 69.250.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.375*

Mathematical Methods I

Laplace transforms, Fourier series and Fourier transforms, solutions of partial differential equations of mathematical physics, boundary value problems, applications.

Prerequisite: Mathematics 69.201.

Precludes additional credit for Mathematics 69.304*, 69.305*, 69.306*.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.376*

Mathematical Methods II

Analytic functions, contour integration, residues, applications. Matrix theory, eigenvalues, diagonalization of symmetric matrices, applications.

Prerequisite: Mathematics 69.201.

Precludes additional credit for Mathematics 69.305*, 69.307*, 70.307*.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.381*

Optimization

Mathematical foundations of model building. Classical optimization. Unconstrained problems. Linear programming, network flow problems, nonlinear programming. Integer programming.

Prerequisites: Mathematics 69.208* (or 69.201), 69.217* and Computer Science 95.103* (60.200*).

Day division, Second term: Lectures three hours a week and laboratory.

Mathematics 69.384*

Data Structures and Algorithm Analysis

Review of basic data structures such as stacks, queues, and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs — representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.384*.)

Prerequisites: A Second-year Mathematics course and Computer Science 95.202*. (For 1980-81 only, one of Computer Science 95.201* or 95.207* will be accepted in lieu of 95.202*.)

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.386*

Numerical Analysis

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.386*.)

Prerequisites: Computer Science 95.103* (60.200*), or 95.106*, Mathematics 69.102 or 69.207*, and 69.112 or 69.217*; or 69.201, or 69.202, or 69.203.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 69.387*

Mathematical Software

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g., linear systems, non-linear systems, optimization, or differential equations. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.387*.)

Prerequisite: Mathematics 69.386* or Computer Science 95.366*.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 69.397*

Directed Studies

Available only to students whose program requires a half course equivalent not offered by the Department of Mathematics and Statistics.

■ Mathematics Courses for Honours Students

Mathematics 70.200

Calculus

Real numbers, sequences, infinite series of real or complex constants, limits and continuity, functions of several variables, definite, multiple, line integrals, infinite series of functions.

Prerequisites: Mathematics 69.102 or 69.207*, (69.207* may be taken concurrently with permission of the Department).

Precludes additional credit for Mathematics 69.201, 69.202, 69.203, 69.208*, 69.309*.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.210

Algebra

Set theory, algebraic systems, vector spaces, inner product spaces, linear transformations, determinants, quadratic forms, selected applications.

Prerequisites: Mathematics 69.112 or 69.217*, (69.217* may be taken concurrently with permission of the Department).

Precludes additional credit for Mathematics 69.218*.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.260

Introduction to the Applications of Mathematics

Mathematical foundations of model building, models, differential models and introduction to the mathematical foundations of classical mechanics, discrete probability models, linear statistical models, some standard probability distributions, statistical decisions and tests of hypothesis. Applications in a variety of fields.

Prerequisites: Mathematics 69.102 and 69.112 or 69.207* and 69.217*.

Precludes additional credit for Mathematics 69.245*, 69.250, 69.257*, 69.258*, Economics 43.220, Psychology 49.205*.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.297*

Directed Studies

Available only to students whose program requires a half course equivalent not offered by the Department of Mathematics and Statistics.

Mathematics 70.301*

Real Analysis I

Metric spaces; limits, continuity, open and closed sets, connectedness, bounded and compact sets, complete spaces. Riemann integration, improper integrals. Some famous theorems of analysis, e.g., Weierstrass' approximation theorem. Picard's theorem and Arzela's theorem.

Prerequisite: Mathematics 70.200 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.302*

Real Analysis II

Convergence and uniform convergence of sequences of functions. Introduction to Lebesgue integration and Fourier series.

Prerequisite: Mathematics 70.200 or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.307*

Functions of a Complex Variable

Analytic functions, contour integration, residue calculus, conformal mapping.

Prerequisite: Mathematics 70.200, or permission of the Department.

Precludes additional credit for Mathematics 69.305*, 69.307* or 69.376*.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.308*

Theory of Ordinary Differential Equations

Linear differential equations, systems of linear first order equations, adjoints and integrating factors, the Cauchy problem, analytic differential equations, existence theory, regular singular point theory, Sturm-Liouville theory.

Prerequisites: Mathematics 70.302*. May be taken concurrently.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.310

Modern Algebra

Graphs, groups, rings, integral domains, fields; polynomial domains and linear algebra with applications to enumeration problems, optimization of combinatorial problems, coding theory.

Prerequisites: Mathematics 70.210 or permission of the Department.

Precludes additional credit for Mathematics 69.310, 70.385.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.326*

Foundations of Projective Geometry

Definition of a general projective plane and immediate consequences; finite planes (combinatorial results, sub-planes, incidence matrices), and planar ternary rings; collineations, role of Desargues' configuration, examples of types of planes.

Prerequisite: Mathematics 70.210.

Precludes additional credit for Mathematics 69.326*. Not offered 1980-81.

Mathematics 70.336*

Elements of Set Theory

Informal treatment of the axioms of set theory. Development of the systems of natural numbers, integers, rational numbers, and real numbers using both Dedekind sections and Cauchy sequences based on Peano's axioms. The axiom of choice, Zorn's lemma, well-ordering. The Schroder-Bernstein theorem, cardinal numbers, ordinal numbers, transfinite induction, cardinal and ordinal arithmetics.

Prerequisite: Mathematics 70.210 or permission of the Department.

Not offered 1980-81.

Mathematics 70.345*

Dynamical Systems II

Dynamics of particle systems; linear and angular momentum; conservation laws; collisions. Kinematics of a rigid body; moments and products of inertia; angular momentum; two dimensional rigid body motion. Moving axes. Generalized coordinates; Lagrange's equations; Hamilton's equations. Hamilton's principle. Introduction to the Hamilton-Jacobi theory and to the concepts of Integral Invariants and local stability.

Prerequisites: Mathematics 70.200 and 70.260.

Precludes additional credit for Mathematics 69.345*. Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.346*

Dynamical Systems III

Basic concepts of dynamical systems. Stability; limit cycles; Lyapunov's direct method. Qualitative theory of nonlinear dynamical systems; Poincaré-Bendixon theorem. Volterra systems; principle of competitive exclusion in population biology. The mathematical theory of war. The threshold theorem of epidemiology. Basic concepts of nonequilibrium statistical mechanics. Prerequisites: Mathematics 70.200 and 70.260.

Not offered 1980-81.

Mathematics 70.350

Mathematical Statistics

Random variables and moment generating functions; concepts of conditioning and correlation; laws of large numbers, central limit theorem; multivariate normal distribution; distributions of functions of random variables, sampling distributions, order statistics, empirical distribution functions, Monte Carlo methods,

elements of decision theory, point estimation, interval estimation, tests of hypotheses; robustness, nonparametric methods.

Prerequisites: Mathematics 70.200, 70.210 and 70.260, or permission of the Department.

Precludes additional credit for Mathematics 69.350.

Day division: Lectures three hours a week and one hour tutorial.

Mathematics 70.355★

Analysis of Variance Techniques

Linear statistical models and the method of least squares. Role of randomization in experimental designs. Theory and analysis of the completely randomized, randomized block and Latin square designs; subsampling designs and relative efficiency comparisons, orthogonal contrasts and multiple comparison techniques. Factorial experiments, split plot designs.

Prerequisites: Mathematics 69.217★, 69.350 or 70.350 (which may be taken concurrently) or permission of the Department.

Precludes additional credit for Mathematics 69.351. Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.356★

Introduction to Stochastic Processes

Recurrent events, Markov chains, Poissons processes, elements of Brownian motion and Kolmogorov-Chapman equations.

Prerequisites: Mathematics 70.200 and 70.260, or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.385★

Discrete Structures and Applications

Algebraic structures; lattices, Boolean algebra; elements of the theory of directed and undirected graphs; combinatorics; Polya theory of enumeration, languages over an alphabet, switching circuits, optimization and complete design, algebraic codes, flow charts, connectivity, minimal paths. A substantial part of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.385★.)

Prerequisites: Mathematics 69.218★, 70.210 or 69.311★.

Precludes additional credit for Mathematics 70.310. Day division, Second term: Lectures three hours a week and one hour tutorial.

■ A selection of courses in the 400 series will be offered.

Mathematics 70.401★

Vector Calculus

Linear transformations, multiple integrals, differential forms, vector functions and fields, vector calculus, applications.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Not offered 1980-81.

Mathematics 70.403★

Functional Analysis

Metric spaces, Baire's Category theorem, contraction mappings and applications; Banach spaces, subspaces and product spaces; continuous linear functionals, the dual space; Banach spaces of continuous functions, Stone-Weierstrass theorem, equicontinuity and Ascoli's theorem; Banach spaces of bounded linear operators, uniform boundedness, open mapping, bounded inverse and closed graph theorems.

Prerequisites: Mathematics 70.301★ and 70.302★ or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.407★

Measure Theory

Measure theory and integration of real-valued functions.

Prerequisite: Mathematics 70.302★ or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.415★

Rings and Modules

Fundamental concepts in rings and modules, structure theorems, applications.

Prerequisite: Mathematics 70.310 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.416★

Group Theory

Fundamental principles as applied to abelian, nilpotent, solvable, free, and finite groups; representations.

Prerequisite: Mathematics 70.310 or permission of the Department.

Not offered 1980-81.

Mathematics 70.417★

Commutative Algebra

Fields, including algebraic and transcendental extensions, Galois theory, valuation theory; Noetherian commutative rings, including Noether decomposition theorem and localization.

Prerequisite: Mathematics 70.310 or permission of the Department.

Not offered 1980-81.

Mathematics 70.418★

Homological Algebra and Category Theory

Axioms of set theory; categories, functors, natural transformations; free, projective, injective and flat modules; tensor products and homology functors, derived functors; dimension theory.

Prerequisite: Mathematics 70.310 or permission of the Department.

Not offered 1980-81.

Mathematics 70.425*

Introduction to General Topology

Topological spaces, maps, subspaces, product and identification topologies, separation axioms, compactness, connectedness.

Prerequisite: Mathematics 70.301* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.426*

Introduction to Algebraic Topology

An introduction into homotopy theory. Topics include the fundamental group, covering spaces and the classification of two-dimensional manifolds.

Prerequisites: Mathematics 70.310 and 70.425* or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.427*

Foundations of Geometry

A study of at least one modern axiom system of Euclidean and non-Euclidean geometry, embedding of hyperbolic and Euclidean geometries in the projective plane, groups of motions, models of non-Euclidean geometry.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Not offered 1980-81.

Mathematics 70.428*

Introduction to Differential Manifolds

A study of differentiable manifolds from the point of view of either differential topology or differential geometry. Topics such as smooth mappings, transversality, intersection theory, vector fields on manifolds, Gaussian curvature, Riemannian manifolds, differential forms, tensors and connections are included.

Prerequisite: Mathematics 70.301* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.435*

Analytic Number Theory

Dirichlet series, characters, Zeta-functions, prime number theorem, Dirichlet's theorem on primes in arithmetic progressions, binary quadratic forms.

Prerequisite: Mathematics 70.307* or permission of the Department.

Not offered 1980-81.

Mathematics 70.436*

Algebraic Number Theory

Algebraic number fields, bases, algebraic integers, integral bases, arithmetic in algebraic number fields, ideal theory, class number.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Not offered 1980-81.

Mathematics 70.445*

Analytical Dynamics

Dynamics of a rigid body in three dimensions. Euler angles. Inertia tensor. Euler's equations of motion. Hamilton's equations. Canonical transformation. Hamilton-Jacobi theory. Theory of small oscillations.

Prerequisite: Mathematics 70.345* or permission of the Department.

Not offered 1980-81.

Mathematics 70.446*

Hydrodynamics and Elasticity

Properties of Cartesian Tensors; fundamental laws; motion of fluids (perfect and viscous); elastic materials.

Prerequisites: Mathematics 70.307*, 70.345* and 70.346* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.447*

Tensor Analysis and Relativity Theory

Development of tensor analysis, application to Riemannian spaces and relativity theory.

Prerequisites: Mathematics 70.345* and 70.346* or permission of the Department.

Not offered 1980-81.

Mathematics 70.450*

Parametric Estimation

Preliminaries on probability theory; exact and asymptotic sampling distributions; unbiasedness, consistency, efficiency, sufficiency, and completeness; properties of maximum likelihood estimators; least squares estimation of location and scale parameters based on order statistics and sample quantiles; Best Asymptotically Normal (BAN) estimators.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.451*

Probability Theory

Introduction to probability, characteristic functions, probability distributions, limit theorems.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.452*

Sampling: Theory and Methods I

Basic concepts in sampling from finite populations; simple random sampling; stratified sampling; choice of sampling unit; cluster and systematic sampling; introduction to multistage sampling; ratio estimation; sampling with unequal probabilities and with replacement; replicated sampling; related topics.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.453***Regression Analysis**

Discussion of notions of statistical relationship; simple linear regression including estimation, tests of hypotheses, transformation and some applications; multiple linear regression including polynomial regression, orthogonal functions, harmonic analysis and multiple and partial correlation; selected topics in non-linear regression, discriminant analysis and stepwise regression.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.456***Non-Parametric Methods I**

Order statistics; rank statistics; permutations; uniform distribution over the space of permutations; distribution of linear rank statistics; approximate normality of linear rank statistics; hypothesis of randomness; stochastic ordering; Wilcoxon test, median tests, Van Der Waerden test, Kolmogorov-Smirnov test; hypothesis of symmetry and random blocks; hypothesis of independence; treatment of ties; power and efficiency of rank tests.

Prerequisite: Mathematics 70.350 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.457***Testing of Hypotheses**

Confidence interval, fiducial interval, Bayesian interval, most powerful test, uniformly most powerful test, power function, minimal sufficiency, complete statistic, similar regions, unbiased test, likelihood ratio test.

Prerequisite: Mathematics 70.450* or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.458***Stochastic Models**

Markov chains, fields and processes, Analytical methods, simulation and approximation methods, inference and decision problems. Stochastic models arising in the physical, biological, social information, management and systems science.

Prerequisites: Mathematics 70.350 and 70.356* or permission of the Department.

Not offered 1980-81.

Mathematics 70.459***Statistical Methods in Operations Research**

Dynamic programming: modelling of physical systems by Markov chains; sequential inference problems; adaptive control processes; the principle of optimality; dynamic programming under uncertainty.

Prerequisites: Mathematics 70.356* and 70.451* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.470***Partial Differential Equations**

First order linear, quasi-linear, and nonlinear equations; second order equations in two and more variables; systems of equations; the wave equation; Laplace and Poisson equations, Dirichlet and Neumann problems; Green's functions.

Prerequisites: Mathematics 70.308* and one of 70.302* or 70.307* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.471***Partial Differential Equations**

Theory of distributions, initial-value problems based on 2-dimensions wave equations, Laplace transform, Fourier integral transform, diffusion problems, Helmholtz equation with application to boundary and initial-value problems in cylindrical and spherical coordinates.

Prerequisites: Mathematics 70.308* and one of 70.302* or 70.307* or permission of the Department.

Not offered 1980-81.

Mathematics 70.472***Integral Transforms**

Laplace, Fourier, Hankel and Mellin transforms, selection of a suitable transform for a given partial differential equation boundary value problem. Operational properties of transforms. Inversion theorems. Approximate evaluation of inversion integrals for small and large values of parameter. Application to the solution of integral equations.

Prerequisite: Mathematics 70.307* or permission of the Department.

Not offered 1980-81.

Mathematics 70.473***Qualitative Theory of Ordinary Differential Equations**

Ordinary differential equations: existence-uniqueness theorems, vector formulation for systems; stability theory, Lyapunov theorems, perturbation theorems and structural stability; Poincaré-Bendixon theory.

Prerequisites: Mathematics 70.301*, 70.308*.

Not offered 1980-81.

Mathematics 70.476***Special Functions**

Gamma, Hypergeometric, Bessel and Legendre functions. Introduction to asymptotic methods.

Prerequisite: Mathematics 70.307* or permission of the Department.

Not offered 1980-81.

Mathematics 70.482***Introduction to Mathematical Logic**

Symbolic logic, propositional and predicate calculi, set theory and model theory, completeness.

Prerequisite: Mathematics 70.210 or permission of the Department.

Not offered 1980-81.

Mathematics 70.483*

Topics in Applied Logic

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic. (Also listed as Computer Science 95.483*.)

Prerequisite: Mathematics 70.210 or 70.385* or permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.484*

Design and Analysis of Algorithms

Description: design techniques: divide and conquer, backtracking, dynamic programming, search methods. Algorithms for graph problems, optimization problems, algebraic problems. Lower bounds and the P-NP question. Some of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.484*.)

Prerequisite: Mathematics 69.384* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.485*

Theory of Automata

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. Some of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.485*.)

Prerequisite: Mathematics 70.385* or 70.310 or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.486*

Numerical Analysis

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. Some of the assigned work in this course requires use of the computer. (Also listed as Computer Science 95.486*.)

Prerequisite: Permission of the Department.

Day division, Second term: Lectures three hours a week and one hour tutorial.

Mathematics 70.487*

Game Theory

Two-person zero-sum games; infinite games; multi-stage games; differential games; utility theory; two-person general-sum games; bargaining problem; n-person games; games with a continuum of players. Prerequisite: Mathematics 70.301* or permission of the Department.

Day division, First term: Lectures three hours a week and one hour tutorial.

Mathematics 70.495*

Honours Project

Consists of a written report on some approved topic or topics in the field of mathematics, together with a short lecture on the report.

Prerequisite: Honours Mathematics students only.

Mathematics 70.496*

Directed Studies

Prerequisite: Honours Mathematics students only.

First and Second terms.

Mathematics 70.497*

Directed Studies

Available only to students whose program requires a half course not offered by the Department of Mathematics and Statistics.

Courses Planned for Summer School and Evening Division, 1981-84.

Summer 1981

69.107*, 69.117*, 69.127*, 69.201*, 69.257*.

Evening Division 1981-82

69.006*, 69.007*, 69.106*, 69.107*, 69.117*, 69.127*, 69.207*, 69.208*, 69.217*, 69.218*, 69.257*, 69.335*, 69.384*.

Summer 1982

69.107*, 69.117*, 69.127*, 69.201, 69.257*.

Evening Division 1982-83

69.006*, 69.007*, 69.106*, 69.107*, 69.117*, 69.127*, 69.207*, 69.208*, 69.217*, 69.218*, 69.257*, 69.345*, 70.385*.

Summer 1983

69.107*, 69.117*, 69.127*, 69.201, 69.257*.

Evening 1983-84

69.006*, 69.007*, 69.106*, 69.107*, 69.117*, 69.127*, 69.207*, 69.208*, 69.217*, 69.218*, 69.257*, 69.310, 69.351.

Officers of Instruction

Chairman

M.K. Sundaresan

Professors

R.L. Clarke

K.W. Edwards

D. Kessler

G.R. Love

M.K. Sundaresan

J.L. Wolfson

Visiting Professor

G. Herzberg

Associate Professors

R.D. Barton

D.J. Brown

R.K. Carnegie

A.L. Carter

T.J.S. Cole

L. Copley

J.E. Hardy

R. Morrison

L. Resnick

W.J. Romo

Assistant Professor

P.J.S. Watson

Research Associates

P. Estabrooks

R.J. Hemingway

A. MacPherson

Instructors

J.-G. Boutin

D. Menagh

Adjunct Professors

A.J. Alcock, *National Research Council*

R.G. Baker, *Civic Hospital Cancer Clinic*

T.F.W. Embleton, *National Research Council*

C.K. Hargrove, *National Research Council*

E.P. Hincks

Sessional Lecturers

L. Avery

A. Woodsworth

General Information

Students taking a single course in Physics should take Physics 75.010 or 75.105. Students taking more than one course in Physics should take Physics 75.100.

Prerequisites for entry into Second-year courses are normally Physics 75.100, and Mathematics 69.107* and 69.117* or 69.127*. Mathematics 69.102 and 69.112 may be taken instead. Subject to the recommendation of the Major department and the approval of the Physics Department, other combinations of one of Physics 75.100 and 75.105 and Mathematics may be offered. Prerequisites for the Third-year courses will normally be Physics 75.211*, 75.222* and 75.235*.

Part-time students are accepted in the Department. Such students should consult with the Department for full details of the available programs.

Major Program

Typical pattern (normal departmental requirements):

First Year

Physics 75.100;

Chemistry 65.100;

Mathematics 69.107* and 69.117*;

Biology 61.100 or 61.101 or Geology 67.100;

One Arts or Social Science course.

Second Year

Physics 75.211*, 75.222*, 75.235*, 75.236*;

Mathematics 69.207* and 69.208*, 69.217*;

One of Mathematics 69.257* or Science 60.200*;

One Arts or Social Science course or a free option.

Third Year

Physics 75.307* or 75.308*;

Physics 75.361*, 75.362*, 75.338*, 75.342*;

Mathematics 69.375*, 69.376*;

Plus one half course to be chosen from:

Substitution of Physics 75.300 for 75.307* or 75.308*;

Mathematics 69.386*;

Physics 75.381*;

One Arts or Social Science course or a free option. At least one Arts or Social Science course must be taken either in Second or Third year.

Honours Programs

Honours in Physics — Experimental Options

Typical pattern (normal departmental requirements):

First Year

As for Physics Major course, or with Mathematics 69.107* and 69.117*, and Geology 67.100 or Biology 61.100 in the Physics Major course replaced by Mathematics 69.102, 69.112.

Second Year

Physics 75.211*, 75.222*, 75.235*, 75.236*;
 Mathematics 69.207* and 69.208* and 69.217* (if
 Mathematics 69.107* and 69.117* taken in First year)
 or Mathematics 69.208* and 69.218* and one half
 course free option (if Mathematics 69.102 and 69.112
 taken in First year);
 Mathematics 69.257* or Science 60.200*;
 One Arts or Social Science course or a free option.

Third Year

Physics 75.300, 75.338*, 75.342*, 75.361*, 75.362*,
 75.381* and 75.386;
 One half course in Arts or Social Science or a free
 option;
 The equivalent of at least one Arts or Social Science
 course must be taken during the Second, Third or
 Fourth years.

Fourth Year, Option 1

Physics 75.437*, 75.477*, 75.478*;
 Physics 75.400 (students taking courses with labora-
 tories associated with them from other Departments
 will be allowed to register in Physics 75.407* or
 75.408* instead of in 75.400);
 Physics 75.458* or 75.462* or 75.468*;
 Physics 75.499 or 75.497* or 75.498*;
 One half-course in Arts or Social Science or free
 option;
 Plus sufficient approved Physics and/or Mathematics
 and/or Engineering options to raise the total to five
 courses.

Fourth Year, Option 2

Physics 75.437*, 75.477*;
 Physics 75.400 (students taking courses with labora-
 tories associated with them from other Departments
 will be allowed to register in Physics 75.407* or
 75.408* instead of in 75.400);
 Physics 75.428* or 75.458* or 75.481* or 75.421*;
 Physics 75.499 or 75.497* or 75.498*;
 One half-course in Arts or Social Science or free
 option;
 Plus sufficient approved Physics and/or Mathematics
 and/or Engineering options to raise the total to five
 courses.

Honours in Physics — Theoretical Option

First Year

Physics 75.100;
 Chemistry 65.100;
 Mathematics 69.102, 69.112;
 One Social Science or Arts course.

Second Year

Physics 75.211*, 75.222*, 75.235*, 75.236*;
 Mathematics 69.208*, 69.218*;
 One of Mathematics 69.257* or Science 60.200*;
 One Arts or Social Science course or a free option;
 One half-course free option.

Third Year

Physics 75.307* or 75.308*;
 Physics 75.338*, 75.342*, 75.361*, 75.362*, 75.381*,
 75.386;
 One of Engineering 94.366* or Mathematics 69.386*;
 One half course in Arts or Social Sciences or a free
 option;
 The equivalent of at least one Arts or Social Science
 course must be taken during the Second, Third or
 Fourth years.

Fourth Year

Physics 75.407* or 75.408*;
 Physics 75.437*, 75.447*, 75.477*, 75.478*;
 Physics 75.497* or 75.498* or 75.499;
 One half-course in Arts or Social Sciences or free
 option;
 Plus sufficient approved Physics and/or Mathematics
 and/or Engineering options to raise the total to five
 courses.

Combined Honours in Geology and Physics

Program Advisers are K. Bell and T.J.S. Cole

A grade of C+ or better in both Geology 67.100 and
 Physics 75.100, and overall Honours standing are re-
 quired before admittance to the program.

Course requirements are as follows:

First Year

Physics 75.100;
 Geology 67.100;
 Mathematics 69.107* and 69.117*;
 Chemistry 65.100;
 One Arts or Social Science course.

Second Year

Physics 75.211*, 75.222*, 75.235*, 75.236*;
 Geology 67.221*, 67.222*, 67.228*, 67.281*;
 Mathematics 69.202;
 Field camp.

Third Year

Physics 75.300, 75.361*, 75.362*;
 Geology 67.323*, 67.324*, 67.385;
 One free option;
 Optional field camp.

A reading proficiency in Russian, German or French
 must be demonstrated in the Third year. (Potential
 graduates in 1980-81 shall have satisfied the language
 requirement in either department.)

Fourth Year

Physics 75.338*;
 One half-credit Physics course at the 400 level;
 Geology 67.481*;
 One half-credit Geology course at the 400 level;
 Physics 75.499 or Geology 67.498;
 One free option;
 One Arts or Social Science course;

A thesis shall be presented and defended orally before the Interdepartmental Committee.

Combined Honours in Physics and Computer Science

Program advisers are M.K. Sundaresan and J.S. Riordon

First Year

Physics 75.100;
 Mathematics 69.107* and 69.117*;
 Computer Science 95.102* and 95.103* (may be replaced by Engineering 94.165);
 One of Chemistry 65.100* Biology 61.100 or 61.101 or Geology 67.100;
 One Arts or Social Science course.

Second Year

Physics 75.211*, 75.222*, 75.235*, 75.236*;
 Computer Science 95.202* and 95.207*;
 Mathematics 69.207* and 69.217*;
 One Arts or Social Science course.

Third Year

Physics 75.338*, 75.361*, 75.362*, 75.386*;
 Physics 75.307* or 75.308*;
 Computer Science 95.302*, 95.303*, 95.304*;
 Computer Science 95.386* or Mathematics 69.386*.

Fourth Year

Physics 75.437*;
 Physics 75.477* or 75.407*;
 Any four half courses in Computer Science numbered in the 95.400 series, excluding 95.480* and 95.481*;
 Physics 75.499, or Computer Science 95.480* and 95.481*;
 One course free option.

Double Honours Program: B.Sc. Honours**Mathematics and Physics**

Program advisers are J.E. Hardy and M. Rahman

Entrance Criteria

Successful completion of First year with a B+ or better in Mathematics 69.102, 69.112 and Physics 75.100, or permission of both departments.

Course Requirements**First Year**

- (a) Mathematics 69.102, 69.112
- (b) Physics 75.100
- (c) Chemistry 65.100 or Biology 61.100
- (d) One Arts or Social Science elective.

Note:

It is highly recommended that Computer Science 95.103* (Science 60.200*) be taken in the First year in addition to the above courses.

Second Year

- (a) Mathematics 70.200, 70.210, 70.260
- (b) Physics 75.211*, 75.222*, 75.235*, 75.342*
- (c) One half-course Arts or Social Science elective.

Third Year

- (a) Mathematics 70.301*, 70.302*, 70.310
- (b) Physics 75.307*, 75.338*, 75.361*, 75.362*
- (c) Mathematics 70.345* or Physics 75.381*; a half course in Mathematics or Physics at the 300 level; Mathematics 70.307* together with Physics 75.388*, or Physics 75.386.

Fourth Year

- (a) One Mathematics course at the 400 level (or equivalent)
- (b) Physics 75.437*, 75.447*, 75.477*, 75.478*
- (c) Two half courses at the 300 or 400 level in Mathematics or Physics
- (d) Honours project in Mathematics or Physics (half course)
- (e) One half-course Arts or Social Science elective.

Graduate Program

Candidates for the Doctor's and Master's degrees are accepted for full-time work in Physics under the supervision of members of the Department. The requirements and general regulations are given in the Graduate Studies and Research Calendar.

Courses Offered

Physics 75.010

Pre-University Physics

Day division: Lectures three hours a week, laboratory, demonstrations and problems three hours a week.

Physics 75.100

Introductory Physics

This course introduces mechanics, the properties of matter, thermodynamics, electricity and magnetism, wave motion, optics, acoustics and some modern topics. A balance is maintained between depth and range.

Prerequisites: Mathematics 69.006* and 69.007* or equivalent, Physics 75.010, or permission of the Department. Science students must at least be concurrently registered in Mathematics 69.107*.

Day and Evening divisions: Lectures three hours a week, laboratory three hours a week.

Physics 75.105

Introductory Physics

An alternative First-year course for students who lack the prerequisite for Physics 75.100 or who intend to take their major work in a department not requiring Physics 75.100.

Prerequisite: Mathematics 69.006* and 69.007* or equivalent.

Day division: Lectures three hours a week, laboratory three hours a week.

Physics 75.120

Elementary Astronomy for Science and Engineering Students

A survey course in astronomy, astrophysics and cosmology, giving a descriptive treatment of the known stellar, galactic and extra-galactic systems. A review of the modern ideas concerning the structure, origin and evolution of the universe. Fields of current interest in astronomy, including the study of quasars, pulsars and supernovae are discussed. Additional topics include the development of space-age astronomy and studies of the possible existence of extraterrestrial life. A 10-inch telescope is available for student use. Some of the lectures may be given with Physics 75.190. For students of Science and Engineering.

Prerequisite or co-requisite: Physics 75.100 or Physics 75.105.

Evening division: Two one-and-a-half hour lectures a week.

Physics 75.190

Introduction to Astronomy

A survey course in astronomy, astrophysics and cosmology, giving a descriptive treatment of the known stellar, galactic and extra-galactic systems. A review of the modern ideas concerning the structure, origin and evolution of the universe. Fields of current interest in astronomy, including the study of quasars, pulsars and supernovae are discussed. Additional topics include the development of space-age astronomy and studies of the possible existence of extraterrestrial life. A 10-inch telescope is available for student use.

Evening division: Two one-and-a-half hour lectures a week.

Physics 75.195

Physics of Music

The physics of musical phenomena. Sound production, propagation, frequency, intensity. Characteristics of musical sounds, pitch, harmonics, attack. Musical instruments, qualities and behaviours, organ, piano, strings, brass, etc. The ear, physiology, behaviour, limitations. Building acoustics. Electronic recording,

reproduction and production of music. Primarily for non-Science Majors and Honours.

Prerequisites: Permission of the Department. Some knowledge of either music and musical notation, or elementary physics is desirable.

Lectures three hours a week.

Physics 75.211*

Mechanics and Properties of Matter

Classical mechanics of a particle and rigid body. Classical properties of matter. Relativistic mechanics. Prerequisites: Physics 75.100, Mathematics 69.107*, and 69.117* or 69.127* or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Text: Kittel, Knight and Ruderman, *Mechanics*.

Day division, First term: Lectures three hours a week, laboratory three hours a week.

Evening division, Second term: Two one-and-a-half hour lectures a week, laboratory three hours a week.

Physics 75.222*

Wave Motion and Optics

Physical optics based on electromagnetic theory, oscillator model for dispersion, absorption, scattering, Huygen's principle, reflection and transmission as coherent scattering. Interference, coherence length, diffraction, polarization, double refraction. Geometrical optics.

Prerequisites: Physics 75.100, Mathematics 69.107* and 69.117* or 69.127* or Mathematics 69.102, and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Day division, Second term: Lectures three hours a week, laboratory three hours a week.

Physics 75.235*

Electricity and Magnetism

The theory of electric and magnetic fields is covered in some detail. Electrostatics, field intensities in various configurations of charges, Gauss' law, electrostatic energy. Dielectric materials, dipoles, dipole-dipole interaction, molecular polarizability. Steady currents, properties of electrical conductors. Magnetic effects of currents and motion of charges in electric and magnetic fields. Time varying currents, electromagnetic induction. Magnetic materials and magnetic measurements. D.C. and A.C. circuit theory. Resonant circuits.

Prerequisites: Physics 75.100, Mathematics 69.107*, and 69.117* or 69.127* or 69.102 and 69.112 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained).

Day division, First term: Lectures three hours a week, laboratory three hours a week.

Physics 75.236*

Physics of Electrical and Electronic Measurements

Basic measuring devices, the oscilloscope; impedances, bandwidth, noise; vacuum tubes, transistors,

useful approximations for circuit design; feedback, amplifier, oscillator; operational circuits; digital circuits and measuring devices. Lectures emphasize the physical basis and useful approaches to instrument use and design. Laboratory emphasizes modern digital instrumentation.

Prerequisite: Physics 75.235*.

Day division, Second term: Lectures three hours a week, laboratory three hours a week.

Evening division, First term: Two one-and-a-half hour lectures a week, laboratory three hours a week.

Physics 75.291*

Physics of the Environment I

The study of physics is essential to the understanding of many contemporary environmental problems. This course examines energy transformations which directly or indirectly are the sources of much pollution. Among the topics considered are the use of fossil, bio mass, solar and nuclear-energy sources; thermodynamical and practical limits to efficiency; thermal pollution; radioactivity and the effects of radiation; growth in energy use and estimates of reserves; the need for conservation and control.

Prerequisite: Physics 75.100 or 75.105 or permission of the Department.

Evening division, First term: Lectures three hours a week.

Physics 75.292*

Physics of the Environment II

This course can be taken as a continuation of Physics 75.291* or independently. It carries forward the study of the relationship of physical principles to environmental problems. Topics considered include: air pollution, its measurement, abatement and possible effects on climate; transportation problems and alternatives; noise pollution, its measurement and possible consequences; communication.

Prerequisite: Physics 75.100 or 75.105 or permission of the Department.

Evening division, Second term: Lectures three hours a week.

Physics 75.300

Third-Year Laboratory

The student is expected to complete a small number of projects. These are closely supervised at the beginning of the year, but the student is encouraged to become as independent as possible. Some of the fields for which apparatus is available are: physical optics, optical spectroscopy, electronics, digital techniques, laser spectroscopy, cosmic rays, microwaves, solid state phenomena, electrical measurements.

Laboratory Techniques: Basic technical operations (mechanical, electronics, etc.) used in the design and construction of research apparatus. Students with satisfactory competence in shop techniques may be excused from this part of the course.

Prerequisite: Permission of the Department.

Day division: Laboratory and seminar six hours a week, workshop three hours a week.

Physics 75.301*

Advanced Physics Laboratory for Non-Physics Science Students

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Day and Evening division, First term: Laboratory and seminar six hours a week.

Physics 75.302*

Advanced Physics Laboratory for Non-Physics Science Students

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Day and Evening divisions, Second term: Laboratory and seminar six hours a week.

Physics 75.307*

Selected Experiments from Physics 75.300

Prerequisite: Permission of the Department.

Day and Evening divisions, First term: Laboratory and seminar six hours a week.

Physics 75.308*

Selected Experiments from Physics 75.300

Prerequisite: Permission of the Department.

Day and Evening divisions, Second term: Laboratory and seminar six hours a week.

Physics 75.338*

Electromagnetism

Vector notation, vector algebra, divergence and Stokes' theorems, the Laplacian. Electrostatic field and magnetostatics. Examples involving Laplace's and Poisson's equations; vector potential; Faraday's laws of induction; Maxwell's equations. Propagation of plane electromagnetic waves in vacuum and dielectric media.

Prerequisite: Physics 75.235* or permission of the Department.

Text: Lorrain and Corson, *Electromagnetic Fields and Waves, Second Edition*.

Day division, Second term: Three hours a week.

Physics 75.342*

Heat and Thermodynamics

Heat and kinetic theory, methods of thermodynamics, and applications of laws of thermodynamics.

Prerequisites: Physics 75.100 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained), Mathematics 69.107*, and 69.117* or 69.127*, or 69.102 and 69.112.

Day division, Second term: Lectures three hours a week.

Physics 75.361*

Modern Physics

The course is designed to provide a logical transition from classical to modern physics. Elements of special relativity. Kinetic theory of gases; determination of the mass and charge of subatomic particles. Rutherford scattering, atomic models. Failure of classical mechanics. Photoelectric effect and Compton scattering. Bohr's theory of the hydrogen atom. Atomic energy states, optical and x-ray spectra. X-ray scattering and diffraction. Elements of nuclear physics and particle physics.

Prerequisites: Physics 75.211*, 75.222*, 75.235*, Mathematics 69.207*, 69.208*, 69.217* or Mathematics 69.202, 69.217*, or permission of the Department.

Day division, First term: Lectures three hours a week.

Physics 75.362*

Elements of Quantum Mechanics

Analysis of interference experiments with waves and particles; fundamental concepts of quantum mechanics, Schrodinger equation; angular momentum, atomic beams; hydrogen atom; atomic and molecular spectroscopy; Pauli principle; simple applications in the physics of elementary particles.

Prerequisite: Physics 75.361*, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.364*

Modern Physics

This course is designed primarily for Engineering students and for students not majoring in Physics. Rapid review of classical physics; special relativity. Particle aspects of electromagnetic radiation. Wave aspects of material particles. Atomic structure. Production of x-rays and x-ray spectra. Molecular binding, solid state physics; nuclear physics. Applications; fission and fusion reactors, coherent optics (lasers, etc.), and semi-conductors. Brief description of cosmic rays and elementary particle physics.

Prerequisites: Physics 75.100 or 75.233* and Mathematics 69.201 for Engineering students, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.381*

Mathematical Physics I

Vector calculus; curvilinear coordinates; irrotational, solenoidal vector field; theorems of Gauss, Stokes;

introductory fluid mechanics. Introduction to Lagrangian and Hamiltonian mechanics; Poisson brackets, tensors and dyadics; rigid body rotations; coupled systems and normal coordinates; relativistic dynamics.

Prerequisites: Physics 75.211*, 75.222*, 75.235*, Mathematics 69.207*, 69.208*, 69.217*, or permission of the Department.

Day division, First term: Lectures three hours a week.

Physics 75.386

Introduction to Theoretical Physics

Theoretical techniques common to all branches of modern physics are introduced. Particular emphasis is placed on methods used in quantum mechanics with problems selected from wave propagation, electromagnetic theory, scattering theory and reactor physics. These include Fourier series and integrals, elementary generalized functions, contour integration, residue calculus, Fourier and Laplace transforms, methods for solving linear ordinary and partial differential equations, and Green's functions.

Prerequisite: Physics 75.211*, 75.222*, 75.235*, Mathematics 69.207*, 69.208*, 69.217*, or permission of the Department.

Day division: Lectures three hours a week.

Physics 75.388*

Mathematical Physics II

Linear differential equations of second order. Fourier series and integrals, elementary generalized functions; Fourier and Laplace transforms; Green's functions, with applications; boundary value problems.

Prerequisites: Physics 75.381* or Mathematics 69.345 or 70.345 (may be taken concurrently); Mathematics 69.307*, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.400

Fourth-Year Laboratory

The student is expected to complete detailed projects involving some original planning both in concept and experimental technique. Projects are similar to Physics 75.300 but are of a more sophisticated nature.

Prerequisite: Physics 75.300 or 75.307* or 75.308*.

Day division: Laboratory and seminar six hours a week.

Physics 75.407*

Selected Experiments from Physics 75.400

Prerequisite: Physics 75.300 or 75.307* or 75.308*.

Day division, First term: Laboratory and seminar six hours a week.

Physics 75.408*

Selected Experiments from Physics 75.400

Prerequisite: Physics 75.300 or 75.307* or 75.308*.

Day division, Second term: Laboratory and seminar six hours a week.

Physics 75.421*

Astronomy and Astrophysics

Introduction to stellar astronomy, binary stars, stellar atmospheres, variable stars, stellar structure, stellar evolution, introduction to radio astronomy, interstellar matter and gaseous nebulae, supernovae and pulsars, galactic structure, quasars, cosmology.

Prerequisites: Physics 75.361* and 75.362*, or permission of the Department.

Evening division, First term: Lectures three hours a week.

Physics 75.428

Modern Optics

Diffraction theory, coherence, Fourier optics, spatial filtering; holography and its applications; laser theory: stimulated emission, cavity optics, modes; gain and bandwidth; design and characteristics of atomic and molecular gas lasers.

Prerequisites: Physics 75.361* and 75.362*, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.437*

Electromagnetic Radiation

Electromagnetic wave propagation in a vacuum, dielectrics, conductors, and ionized gases; reflection, refraction, polarization at the plane boundary between two media; waveguide and transmission line propagation; dipole and quadrupole radiation fields; antenna systems. Electromagnetic mass, radiation pressure. Tensor notation, transformation of the electromagnetic fields.

Prerequisites: Physics 75.338*, 75.381*, and 75.386 (except for Mathematics and Physics Double Honours students), or permission of the Department.

Text: Lorrain and Corson, *Electromagnetic Fields and Waves*.

Day division, First term: Lectures three hours a week.

Physics 75.447*

Statistical Physics

Equilibrium statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics are derived, and applied in appropriate physical situations. Fluctuations. Kinetics and transport processes, including the Boltzmann transport equation and some of its applications.

Prerequisites: Physics 75.342*, 75.361*, 75.362*, and 75.477* to be taken concurrently, or permission of the Department.

Day division, First term: Lectures three hours a week.

Physics 75.457*

Ionization and Breakdown in Gases

Review of kinetic theory and atomic structure; elastic and inelastic collisions; charged particles in gases at low and high E/p ; amplification and quenching mechanisms. Instrumentation applications. Breakdown mechanisms; experimental methods. Coronas. Propa-

gation of electromagnetic waves in a plasma. Plasma oscillations. Problems in plasma physics.

Prerequisites: Physics 75.361* and 75.338*, or permission of the Department.

Not offered 1980-81.

Physics 75.458*

Solid State Physics

An introduction to solid state physics. Topics to include crystal structure, phonons and lattice vibrations, conductors, semiconductors, insulators and superconductivity.

Prerequisites: Physics 75.361* and 75.362* or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.462*

Particle Physics

Description of properties of elementary particles; pions, kaons and baryons. Conservation laws, invariance principles and quantum numbers. Resonances observed in final state interactions. Three body phase space; Dalitz plot SU_3 symmetry scheme for classifying elementary particles, mass formulae and electromagnetic mass differences. Weak interactions; decay of neutral kaons; CP violation in neutral K decays. Prerequisite: Physics 75.477*, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.468*

Nuclear Physics

Ground state properties of nuclei, nuclear forces, nuclear levels. Qualitative treatment of Fermi gas model, liquid drop model, shell model and collective model. Alpha, beta and gamma radioactivities. Fission. Passage of particles through matter. Particle detectors. Elements of neutron physics and nuclear reactors.

Prerequisites: Physics 75.361* and 75.362*, or permission of the Department.

Day division, Second term: Lectures three hours a week.

Physics 75.477*

Introduction to Quantum Mechanics I

This course concentrates mainly on the basic interpretative postulates of quantum mechanics. These fundamental concepts are applied to simple one-dimensional problems, and angular momentum theory. Prerequisites: Physics 75.362*, 75.386, or permission of the Department.

Text: Merzbacher, *Quantum Mechanics*.

Day division, First term: Lectures three hours a week.

Physics 75.478*

Introduction to Quantum Mechanics II

Scattering theory and application; bound state problems; approximation methods.

Prerequisite: Physics 75.477*, or permission of the Department.

Text, Merzbacher, *Quantum Mechanics*.

Day division, Second term: Lectures three hours a week.

Physics 75.481*

Diffusion and Flow Phenomena

Continuity equation; flow equations; diffusion of thermal neutrons (collisional energy transfer, scattering probability, statistical energy degradation); Fermi age-velocity theory; fast neutron flow equation; thermal multiplication pile; criticality criteria; solutions of flow and continuity equations; neutron flow (moderation by graphite block.) Also given as Physics 75.553* (Reactor Physics I).

Prerequisites: Physics 75.381*, 75.386, or permission of the Department.

First term: Lectures three hours a week.

Physics 75.497*

Fourth-Year Project

Same as Physics 75.499 except that it extends over the First term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

Day division, First term: A minimum of six hours laboratory or private study a week.

Physics 75.498*

Fourth-Year Project

Same as Physics 75.499 except that it extends over the Second term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

Day division, Second term: A minimum of six hours laboratory or private study a week.

Physics 75.499

Fourth-Year Project

These are advanced projects of an experimental or theoretical nature with an orientation towards research. A written progress report, by mid-term for Physics 75.497*, 75.498*, and by mid-year for Physics 75.499, must be submitted to the student's supervisor prior to the last day for withdrawal from the course. A written and an oral report will be required at the conclusion of the project.

Prerequisite: Permission of the Department.

Day division: A minimum of six hours laboratory or private study a week.

B.Sc. Honours in Psychology

The Department of Psychology offers a program leading to the Honours Bachelor of Science degree. Full details of the Department's offerings may be found in the Faculty of Social Sciences section of the calendar beginning on p. 241. Required courses for the B.Sc. with Honours in Psychology, in the sequence in which it is strongly suggested they be taken, are as follows:

First Year

1. Mathematics 69.107* and 69.117* or 69.127* (or equivalent prerequisites for 69.250 or for 69.217* and 69.257)*;
2. Two of Biology 61.100 or 61.101, Chemistry 65.100, Physics 75.100 or 75.105;
3. Psychology 49.100 as the Social Science elective;
4. One additional credit from Science, Social Science or Arts.

Required courses beyond First year, and the sequence in which it is strongly suggested they be taken, are as follows:

Second Year

1. Psychology 49.200*, 49.220*, 49.250*, and 49.270*;
2. Mathematics 69.250 (or 69.217* and 69.257* for students planning to take further courses in Mathematics);
3. One credit from Arts or Social Science other than Psychology;
4. One optional credit.

Note:

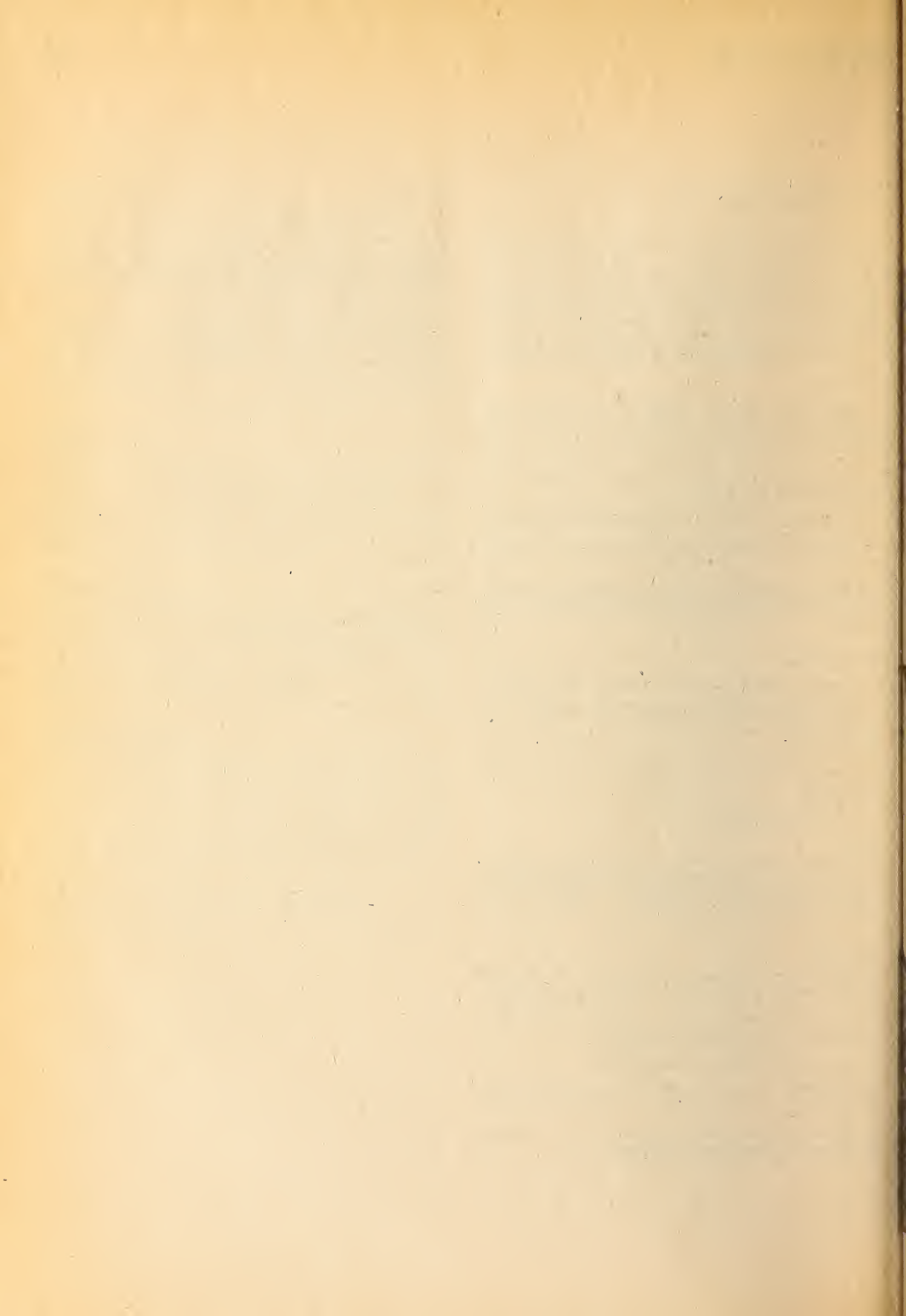
Students who wish to substitute Psychology 49.305 in 2 must offer in 4 a course above the First-year level in Biology, Mathematics, Chemistry or Physics chosen with the approval of the Department of Psychology.

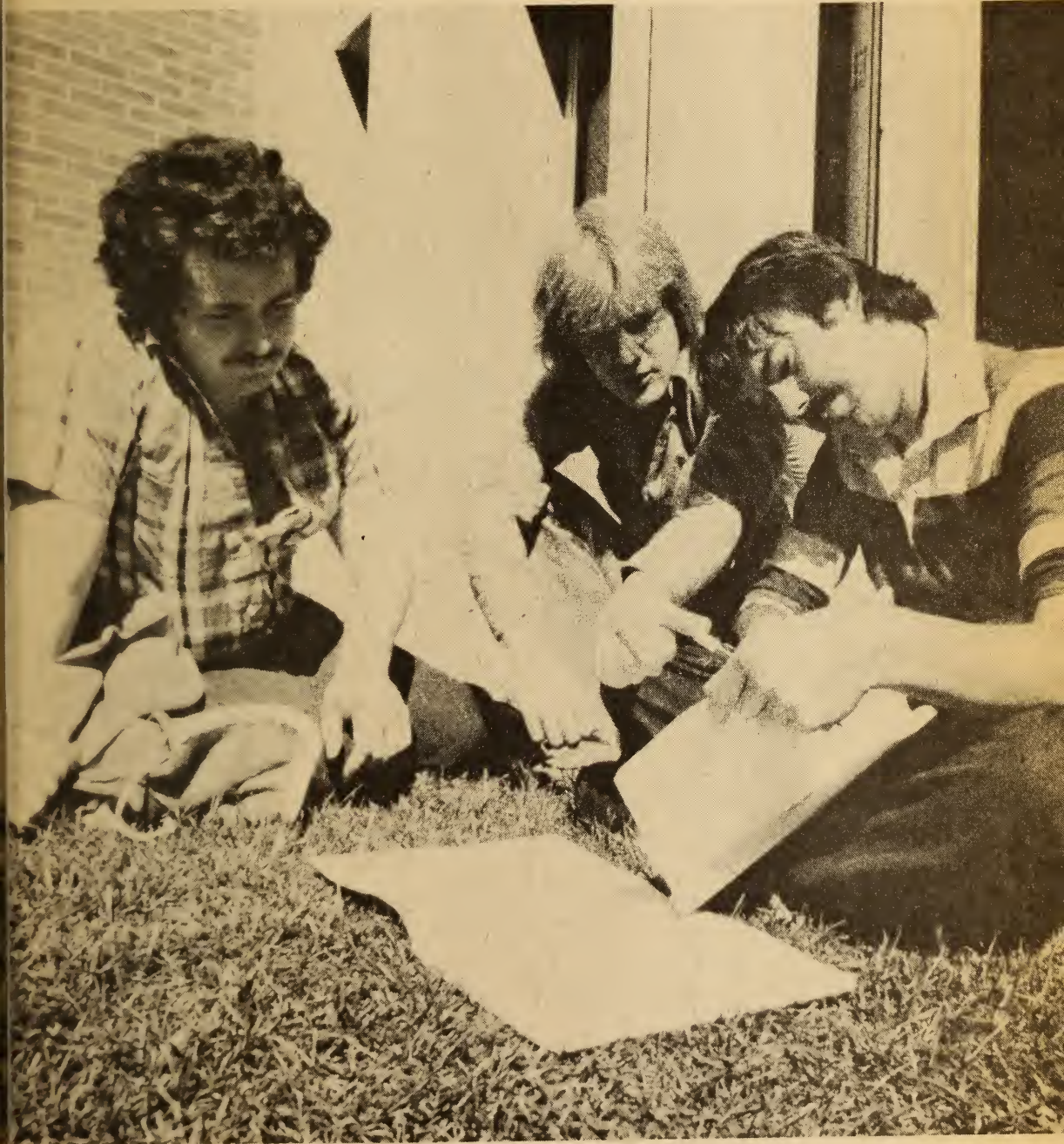
Third Year

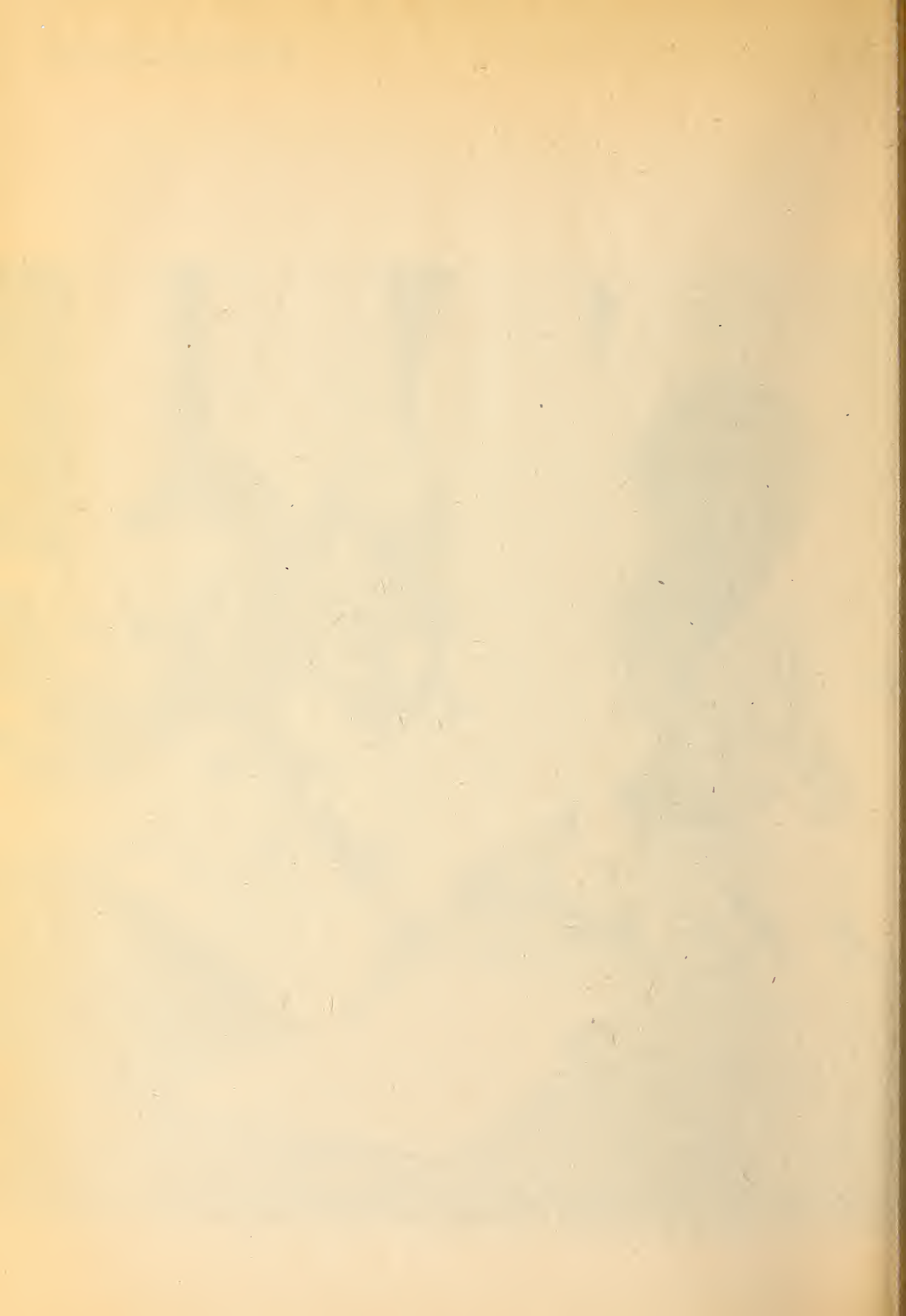
1. One Honours seminar sequence credit (Psychology 49.325, 49.355* and 49.356*, or 49.375* and 49.376*);
2. One of Psychology 49.201*, 49.202*, and 49.204* and one of Psychology 49.300*-303*;
3. One optional credit in Psychology;
4. One credit in Arts or Social Sciences other than Psychology;
5. One credit above the First-year level in Biology, Mathematics, Chemistry or Physics.

Fourth Year

1. Psychology 49.498;
2. One credit in Psychology chosen from the following Science continuation courses: 49.221*, 49.222*, 49.251*, 49.252*, 49.255*, 49.256*, 49.271*, 49.272*, 49.321*, 49.327*, 49.330*, 49.331*, 49.380*;
3. One optional credit in Psychology;
4. One credit above the First-year level in Biology, Mathematics, Chemistry or Physics;
5. One optional credit.







Introduction

The subject areas and specific courses listed in this section of the Calendar include **(a)** courses supervised and/or administered by one of the four undergraduate faculties, but which are available as important areas of concentration to students registered in programs offered by other faculties; **(b)** courses offered by members of more than one discipline or faculty available to all students (subject to restrictions outlined within the course descriptions themselves and the regulations of the Faculty in which the student is registered); **(c)** listings of courses offered by some or all of the faculties, grouped together by the general subject area they address; and **(d)** (p. 437) a list of courses given by specified Departments that are offered chiefly for students who are not registered in Majors, Honours or Combined programs within the Department offering the courses so listed. These are called "Courses for Non-Majors".

With the exception of "Courses for Non-Majors", the subject/discipline areas are listed alphabetically in this section.

African Studies

Interdisciplinary Committee on African Studies

The Committee on African Studies, made up of faculty members with research and teaching interests in Africa, acts as a co-ordinating unit for activities in this area. (Chairman 1980-81 D.R.F. Taylor, Geography and International Affairs.)

Courses on Africa

Although there is no degree program in African Studies at Carleton, there is a strong teaching and active research interest. Courses relating to Africa have been given in various departments and schools for many years and students can select these courses as part of their degree programs.

Detailed descriptions of the courses below can be found in the various departmental listings. Courses at the 500 level are described in the Calendar of the Faculty of Graduate Studies and Research.

Courses Offered

Economics

- 43.456 Economic Development
- 43.555★ The Economics of Development

Geography

- 45.329★ Geography of Development
- 45.330★ Developing Nations of Inter-Tropical Africa (54.330★)
- 45.520★ Rural-Urban Interaction in Africa (46.545★)
- 45.540★ Explorations in Cultural-Historical and Political Geography

History

- 24.275 History of Africa (not offered 1980-81)

International Affairs

- 46.575★ Rural Urban Interaction in Africa (45.520★)
- 46.545★ Foreign Policies in Southern Africa (47.581★) (not offered 1980-81)

Political Science

- 47.310 Government and Politics in Africa
- 47.411 Politics of Developing Societies
- 47.482★ International Politics of Africa
- 47.517★ Selected Problems in African Politics
- 47.545★ Public Administration in Developing Countries
- 47.581★ Foreign Policies of African States (46.545★)

Sociology and Anthropology

Anthropology courses

- 54.330★ Developing Nations of Inter-Tropical Africa (45.330★)
- 54.362 Contemporary Societies of Africa
- 54.517★ Sub-Saharan African Ethnography

General Information

Individual departments at Carleton have offered courses about Asia for many years. The University is a member of the Shastri Indo-Canadian Institute and the home of the executive secretariate of the Canadian Asian Studies Association. The Norman Paterson School of International Affairs and the Paterson Centre also support graduate studies and research on Asia.

The growing importance for the West of the peoples and societies of Asia has promoted a gradual increase in the courses on Asia and related activities on campus. No degree program for Asian Studies exists but members of the Committee for Asian Studies — created by faculty members in 1970 to coordinate courses and research work — offer a wide variety of courses about Asia that are of interest to students. Committee members are available to advise students in Major or Honour's programs in their departments. Students may also submit a program of Asian Studies for a B.A. (Directed Interdisciplinary Studies), according to the procedures described for this degree in the Calendar, p. 189.

Members of the Committee

Robert Bedeski (*Political Science*),
 V.K. Chari (*English*)
 David Chung (*Religion*)
 Nalini Devdas (*Religion*)
 H. Edward English (*Economics*)
 A.M. Gillmor (*Music*)
 J. Keil (*Sociology-Anthropology*)
 David B. Knight (*Geography*)
 Leonard Librande (*Religion*), *Chairman*
 K. Marwah (*Economics*)
 S.B. Park (*Economics*)
 Peter Slater (*Religion*)
 John Strong (*History*)
 V. Subramanian (*Political Science*)
 John Sigler (*International Affairs*)
 Elliot Tepper (*Political Science*)
 David Van Praagh (*Journalism*)
 A.I. Wallace (*Geography*)

Courses Offered

All prerequisite conditions prescribed for these courses must be met. Detailed course descriptions are given under the appropriate department listing in this Calendar. Descriptions for graduate courses can be found in the Graduate Studies and Research Calendar.

Geography

- 45.332* Cultural Geography of the South West Pacific
- 45.360* Soviet Union
- 45.380* Developing Nations of Asia
- 45.540* Territory and Territoriality

History

- 24.222 East Asian Civilization
- 24.361* The Russian Empire
- 24.385* Modern China
- 24.386* Modern Japan

Music

- 30.315 Music Cultures of the World

Political Science

- 47.312 Government and Politics of East Asia
- 47.315 Government and Politics of South and South East Asia
- 47.483* Foreign Policies of Major East Asian Powers
- 47.332* East Asian Political Thought

Religion

- 34.105* Hindu Yoga and the Buddhist Middle Way
- 34.106* Religious Thought and Practice in China and Japan
- 34.202 The Hindu Tradition: Studies in The Nature of Human Consciousness
- 34.203 Religion and Art in India, China and Japan
- 34.204 The Buddhist Middle Way: Its Indian Development
- 34.206 Religion and Philosophies of East Asia
- 34.208 Islam
- 34.320* Selected Problems in Indian Thought
- 34.325* Zen (Ch'an) Buddhism
- 34.342* Selected Problems in Islam
- 34.117 Introduction to Sanskrit
- 34.217 Readings in Sanskrit Literature

Faculty of Graduate Studies and Research**NPSIA**

- 46.526 Integration in Developing Countries
- 46.555 Development Problems in South and South East Asia

Integrated Science Studies

General Information

In Integrated Science Studies a student can create a logically coherent and structured program integrating a strong base of science studies with substantial work in a second discipline in another faculty (e.g. engineering, computer science, political science, economics, journalism). Committee members assist the individual to construct a suitable program of courses.

There are nearly as many different patterns as there are students in the program. Some areas of study (combining both science and non-science components) that are available through the program include environmental sciences, science and management studies, behavioural sciences, information sciences, and premedical studies. Additional information can be found in the program description in the Faculty of Science listings. See pp. 390-391.

Arts and Social Sciences

Humanities 10.100

An examination of selected works, from Biblical times to the present, illustrating the various dominant views on the nature of man and his attempts to understand himself and the world about him.

Prerequisite: First-year standing or higher.

Not offered 1980-81.

Humanities 10.200*

An examination of selected works illustrating various dominant views on the nature of man and his attempts to understand himself and the world about him in the context of the twentieth century as seen from points of view of history, philosophy, social science and literature.

Prerequisite: Second-year standing or higher.

Not offered 1980-81.

Interdisciplinary 04.288

Introduction to Women's Studies

A survey course, designed to increase the student's understanding of the position of women in contemporary society. Instructors from a variety of disciplines offer an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society.

Evening division: Lectures three hours a week.

Interdisciplinary 04.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature as the paramount expression of the writer's concern with *la condition humaine*. Such themes as alienation, dread, subjectivity, freedom, authenticity, and death are explored in selected works by major authors, including Hölderlin, Leopardi, Kierkegaard, Dostoevsky, Nietzsche, Tolstoy, Rilke, Kafka, Conrad, Hesse, Ionesco, Beckett, Sartre and Camus. Attention is also given to the philosophic basis and literary antecedents of the existentialist posture. (Also listed as English 18.390.) All assigned readings will be in English.

Prerequisite: Permission of the Department.

Day division: Lectures and discussions three hours a week.

S.C. Russell

Science

Science 60.100

Man in His Environment

This course is designed to acquaint students in Arts, Social Sciences and Engineering, with the methodology of science in approaching a problem. Included is a general description of the aims and methods of experimental science with an emphasis on environmental and ecological problems. The historical aspects of scientific discoveries are examined, particularly those that are influencing present society. Particular attention is directed to the interactions of science and society and to man's influence and impact on the natural environment. In a framework of the natural sciences, emphasis is on the limits of the natural systems in which man is a member.

Day division: Lectures three hours a week.

H.H.J. Nesbitt

Science 60.200*

Introduction to Scientific Computing

Also listed as Computer Science 95.103*. See p. 60.

Science 60.202*

Introduction to Computers

Also listed as Computer Science 95.102*. See p. 60.

Science 60.206*

Introduction to Data Processing

Also listed as Computer Science 95.104*. See p. 60.

Interdisciplinary Science 00.200

Physical Anthropology (Introduction to the Study of Prehistoric Man)

A course for undergraduates desirous of learning something of what science has to say concerning the history of man. No previous formal training in biology is necessary. Definition and divisions of anthropology; physical anthropology; history, prehistory, and the nature of an historical document; historical introduction to human paleontology; geological time; absolute, relative and conjectural chronology; the evolution of exact chronology; modern techniques. The biological definition of man; relevant comparative anatomy of modern man, the modern anthropoid, and known fossil man. The Australopithecus problem. The Pithecanthropus-Sinanthropus-Atlanthropus group. Heidelberg, Neanderthal, and Cro-Magnon man. The Palestine Group. The relevance of the theory of evolution in the comparative anatomy of these groups. The Teilhard de Chardin synthesis. Pre-historic sites; their occurrence, study and interpretation. Artifacts of fossil man, their nature, classification, and chronology. Prehistoric painting and sculpture. In lieu of essays and term papers students are required to submit a review of each of sixteen texts chosen from the list below. An announcement concerning (a) the spacing of the reviews and, (b) which of them are compulsory, will be made in class. This course is available as an option to

Second- and Third-year students only. For students registered in the Faculty of Science, available only as a free option.

Texts: Leakey, *Adam's Ancestors*; Brace, *The Stages of Human Evolution*; Ardrey, *African Genesis*; LeGros Clark, *Antecedents of Man*; *History of the Primates*; Kroeber, *Anthropology*; *Biology and Race*; Wendt, *In Search of Adam*; Oakley, *Man the Toolmaker*; Burkitt, *Old Stone Age*; Darwin, *Origin of Species*; McKern, editor, *Readings in Physical Anthropology*; Teilhard de Chardin, *The Phenomenon of Man*; Dart, *Adventures with the Missing Link*; Howells, *Evolution of the Genus Homo*; Braidwood, *Prehistoric Men*; Pfeiffer, *The Emergence of Man*; Pilbeam, *The Evolution of Man*; *The Ascent of Man*; Napier, *The Roots of Mankind*; Van-Lawick Goodall, *In the Shadow of Man*; Brothwell, *Digging up Bones*; Heizer, *Man's Discovery of His Past*; Vance Goodall, editor, *The Quest for Man*.

See also Biology 61.391*.

Directed Interdisciplinary Studies, B.A.

For information about the B.A. Directed Interdisciplinary Studies program see p. 189.

Technology, Society, Environment Studies

Our society increasingly faces problems requiring communication among specialists of different disciplines. This is at least in part a result of increasing specialization of people and jobs. The multidisciplinary problems raised by the interaction of an industrial society with its environment, its resource base, and its complex technical systems are addressed by two courses intended for Third-year students and organized by the Technology, Society, Environment Committee. These courses develop the multidisciplinary perspective through problem units on topics including energy, the industrial revolution, pollution, transportation, political regulation of technology, and the conserver society concept, and through team projects which bring together students working in different disciplines. The two courses are T.S.E. 59.301, Technology-Society Interaction; and T.S.E. 59.302, Interaction of Technological Society with the Natural Environment and its Resources. They are described on pp. 433-434.

Other Courses

African Studies, see p. 428.

Asian Studies, see p. 429.

Urban Studies, see p. 435.

Women's Studies, see p. 436.

Members of the Committee

Chairman

P.D. van der Puije (*Engineering*)

Members

J. Lukasiewicz (*Engineering*)

R. Morrison (*Physics*)

L. Mytelka (*Political Science*)

J. O'Manique (*Philosophy*)

P. van der Puije (*Engineering*)

J. Taylor (*History*)

Two Student Representatives

Associated Members

Several members of the Faculty serve on the TSE Studies Committee as Associated Members.

General Information

It is becoming increasingly apparent that:

1. the future of the Western societies depends on their ability to cope with the complex problems resulting from the interactions of Technology, Society and the Environment (TSE);

2. the effectiveness of the democratic political process is contingent upon the perception and comprehension of these phenomena by the electorate;

3. because of the complexity and the wide range of the problems involved, their understanding cannot be gained through specialized education in traditional disciplines. A multidisciplinary approach is required.

Two multidisciplinary courses listed below, offered under the direction of the TSE Studies Committee, seek to fulfill this need. They are designed to provide students from all faculties with a solid basis for understanding the major problems of industrialized society, and with firsthand appreciation, through research project work, of the complexities involved. The TSE courses are open to all students beyond the First year; these courses are especially recommended for students at the Third- and Fourth-year levels. Students enrolled in three-year programs, however, who would like to take both courses are encouraged to take one in the Second year.

TSE 59.301 deals with the major aspects of the interaction of technology and society, whereas TSE 59.302 addresses the problems of resources and of the impact of technology on the natural environment. Together, the two courses provide a fairly complete coverage of the TSE interactions and students are encouraged to take the courses in consecutive years, in the order which best suits their timetables. Each course consists of about 60 lectures given by members of various

faculties and guest speakers, and research project work carried out in small groups of students from different disciplines under the direction of faculty advisers. Project topics are assigned according to students' preferences.

Courses Offered

Technology, Society, Environment 59.301

Technology-Society Interaction

A course intended to introduce students from all faculties to the study of major aspects of the interaction of technology and society. Specific topics include: social, economic, and psychological impact of technology in historical perspective, with case studies of innovations; technology as a motive force in history and as an element in human culture; the modernization process; science and technology in the developing countries; technology transfer; characteristics of industrial civilization. Social management of technology: Canadian and international examples. Major technological systems: transport, communications, energy, urban systems. Assessment and control of technology. Forecasting. Limits to growth. Perspectives on the human future. A research project comprises a significant portion of the course work. Prerequisite: Registration in Second or higher year. Text: *Reading Materials*, TSE 59.301.

Lectures and workshops three hours a week.

J. Lukasiewicz (co-ordinator)

Technology, Society, Environment 59.302

Interaction of Technological Society with the Natural Environment and its Resources

A course intended to introduce students from all faculties to major aspects of the interaction between society and its technology, on the one hand, and the natural environment and its resources, on the other. Topics include the ecological perspective, population, food, resource management, pollution, and political regulation. A research project comprises a significant portion of the course work.

Prerequisite: Registration in Second or higher year.

Lectures and workshops three hours a week.

C.H. Langford (co-ordinator)

Other Related Courses

Other courses related to the TSE area offered by various departments and schools within the University are listed for the convenience of students. Detailed course descriptions are given under the appropriate faculty or department. Please note all prerequisite conditions prescribed for these courses must be met.

Architecture

- 76.302 History of the Canadian Environment
- 76.324* Social Environment Systems
- 76.423* The Human Development/Built Environment Interface 1
- 76.424* The Human Development/Built Environment Interface 2

Biology

- 61.190 Biology and Man
- 61.391* Biology in Society

Chemistry

- 65.371 Environmental Chemistry

Classics

- 13.235 Ancient Science and Technology

Economics

- 43.363* Introduction to Economic Development
- 43.365* The Economics of Planning

Engineering

- 82.480* Resources Planning
- 88.443 Energy Conversion and Power Generation

English

- 18.207 Literature and the Sciences

Geography

- 45.101 The Geographic Web
- 45.230* The Cultural Landscape
- 45.231* Conflict and Accord in the Modern World
- 45.329* Geography of Development
- 45.330* Developing Nations of Inter-Tropical Africa
- 45.333* Land Use, Regional Development and Planning in Canada
- 45.334* Renewable Resource Planning in a Local Area
- 45.351* Northern Lands
- 45.445* Land Resource Use

Geology

- 67.111* Geology, the Environment and Man I
- 67.112* Geology, the Environment and Man II
- 67.204* Earth, Resources and Society
- 67.311* Applied Environmental Geology

History

- 24.329* Canadian Urban History
- 24.330* Canadian Social History
- 24.345* American Urban History
- 24.354 Women and Society

Integrated Science Studies

- 60.399A* and 60.399B* Independent Study

Interdisciplinary

- 10.100 Humanities
- 10.200* Humanities

Journalism

- 28.200 Problems of the Mass Media
- 28.300 The Modern Environment
- 28.434* Media and Society I

Law

- 51.380 Law of Environmental Quality

Mass Communication

- 27.111 Introduction to Mass Communication

Philosophy

- 32.284* Technology, Society and Values

Physics

- 75.291* Physics of the Environment I
- 75.292* Physics of the Environment II

Political Science

- 47.403* Politics and the Media

Religion

- 34.200 The Encounter of Science and Religion

Sociology and Anthropology

- 53.246* Industrial Sociology
- 56.253* Introduction to Human Ecology
- 53.254* Urban Sociology
- 53.260* Community
- 53.312* Science and Society
- 54.333* Economic Systems
- 56.360 Social Change and Modernization
- 53.380 Social Policy

General Information

Many urban studies courses are offered at Carleton. A student must fulfill the stated requirements of a disciplinary Major, Honours or Combined program, but at the same time it is possible for the student to design a sound interdisciplinary program of study that will provide a broader understanding of urban phenomena and processes than would be gained from the point of view of a single discipline.

The Interfaculty Committee on Urban Studies has drawn up the following list of undergraduate courses in urban studies currently offered at Carleton. Students should consult the disciplinary listings in the Calendar for detailed course descriptions and prescribed prerequisites.

Co-ordinator 1980-81: David B. Knight, Chairman, Department of Geography.

Courses Offered

Architecture

- 76.205★ Theories of Landscape Design I
- 76.208★ Theories of Urban Design 1
- 76.209★ Theories of Urban Design 2
- 76.308★ Environmental Design
- 76.328★ Case Studies in Urban Design
- 78.301★ Workshop: Land-Use Analysis
- 78.310★ Land Development
- 78.319★ Workshop: Land Development
- 78.323★ Landscape Architecture
- 78.330★ Community Development
- 78.339★ Workshop: Community Development
- 78.340★ City Organization and Planning Processes
- 78.344★ Urban Design Practice
- 78.345★ Workshop: Urban Design
- 78.349★ Workshop: City Organization and Planning Processes

Art History

- 11.368★ Modern Architecture: The Nineteenth Century
- 11.369★ Modern Architecture: The Twentieth Century

Economics

- 43.480 Research Seminar in Urban Economics

Engineering

- 82.333★ Urban Planning
- 82.434★ Transportation
- 82.435★ Transportation Geography

Geography

- 45.220★ Geography of the Global Economy
- 45.221★ Geographical Challenges of Contemporary Economies

- 45.320★ The Canadian City: Internal Structure and Contemporary Problems
- 45.321★ Systems of Cities: Global Perspectives
- 45.421★ Selected Themes in Urban Geography
- 45.431★ Advanced Cultural Geography
- 45.433★ Urban Planning
- 45.442★ Transportation Geography

Geology

- 67.201★ Introductory Geology for Engineers

History

- 24.308★ Cathedral and Town
- 24.329★ Canadian Urban History
- 24.330★ Social History of Canada
- 24.345★ American Urban History
- 24.346★ American Immigration and Ethnic Groups

Law

- 51.374 Local Government Law

Political Science

- 47.302★ Canadian Municipal Government
- 47.303★ Canadian Urban Politics

Sociology and Anthropology

- 56.253★ Introduction to Human Ecology
- 53.254★ Urban Sociology
- 53.260★ Community
- 53.338 Social Response to the Built Environment
- 53.373★ Urban Anthropology
- 53.456★ Selected Problems in Urban Studies

Women's Studies

General Information

Although there is no Women's Studies degree program at Carleton, Women's Studies courses have been offered at the University since 1971-1972. Such courses have developed at Carleton, as they have elsewhere, in response to the fact that the experience of women has not received adequate attention from the academic community.

At Carleton, Women's Studies courses are offered by several departments, and faculty members and graduate students are pursuing research in the area in many departments. The Interfaculty Committee on Women's Studies was created to provide a measure of co-ordination for these activities. In addition to its co-ordinating functions, the Committee hopes to foster throughout the University an awareness of an obligation on the part of all academic disciplines to include a fuller treatment of women's contribution and experience than has been offered in the past.

Courses Offered

Although the Committee itself offers no courses, the following course offerings are listed here for the convenience of students. Detailed course descriptions are given under the appropriate faculty and department.

Faculty of Arts

Classics

13.344 Women in Antiquity

English

18.292 Women and Literature

18.383 Studies in Canadian Fiction: Works by Women Writers

History

24.354 Women and Society: 1700-Present

24.459 Selected Problems in the History of Women and the Family: From the Industrial Revolution

Religion

34.201 Women in Religious Traditions

Faculty of Graduate Studies and Research

French

20.571 *Féminisme et Poésie en France et au Canada*
(not offered 1980-81)

School of Social Work

52.506* Women and Welfare

52.528* Feminist Counselling

Interdisciplinary

04.288 Introduction to Women's Studies

Faculty of Social Sciences

Law

51.301* Women and the Legal Process

Political Science

47.313* Women in Politics: A Comparative Perspective

Psychology

49.361* Psychology of Women (not offered 1980-81)

Sociology-Anthropology

53.247* Women in Society (not offered 1980-81)

54.248* Anthropology of Sex Roles

The courses that appear in the following list are offered exclusively or primarily for students specializing in another discipline. This section is intended to assist students to find courses of interest which would otherwise be difficult to locate in the calendar. Descriptions for these courses are contained in the appropriate departmental section.

Biology

- 61.190 Biology and Man
- 61.393* Biology and Development of Renewable Resources

Chemistry

- 65.107 The Chemistry of Art and Artifacts
- 65.222 Introductory Organic Chemistry

Classics

- 13.100 Some Aspects of Greek and Roman Civilization
- 13.102* Aspects of Greek Civilization
- 13.103* Aspects of Roman Civilization

Comparative Literature

- 17.361 Studies in Literary Genres
- 17.400 Analytical Approaches to Literature
- 17.401 Selected Topic in Comparative Literature

Economics

- 43.201* Introduction to Micro-Economic Theory and Analysis
- 43.211* Introduction to Macro-Economic Theory and Analysis

English

- 18.100 English Authors from Chaucer to T.S. Eliot
- 18.101 English and Continental Texts
- 18.102 Form and Tradition
- 18.268 Forms and Conventions of the Cinema
- 18.291 Writing Seminar in Poetry
- 18.293 Writing Seminar in Prose Fiction

French

- 20.100 Elementary French
- 20.101 Introductory Immersion French
- 20.102 Intermediate French (A)
- 20.103 Intermediate French (B)
- 20.106* Reading French
- 20.108 French Language Course for Non-Majors
- 20.151 French-Canadian Literature
- 20.152 French Literature

Geology

- 67.111*, 67.112* Geology, The Environment and Man I and II
- 67.201* Geology for Engineers
- 67.202* Non-Renewable Primary Resources
- 67.204* Earth, Resources and Society

German

- 22.230 Austrian Culture and History

History

- 24.231 Historical Introduction to Modern Canada

Italian

- 26.210* Italian Civilization I: Literature, Arts and Society in Italy from the Thirteenth Century to the Renaissance
- 26.211* Italian Civilization II: Literature, Arts and Society in Italy from the Unification to the Present Time
- 26.220 Background to the Study of Italian Literature (English section)
- 26.350* Italian Literature in Translation

Law

- 51.201 The Elements of Law

Mathematics

- 69.107* Elementary Calculus I
- 69.117* Elementary Algebra
- 69.127* Topics in Calculus and Algebra
- 69.131* Mathematics in Architecture I
- 69.132* Mathematics in Architecture II
- 69.141* Gambling I
- 69.142* Gambling II
- 69.201 Intermediate Calculus
- 69.202 Intermediate Mathematics
- 69.250 Introduction to Statistical Analysis

Music

- 30.100 Introduction to the Music of Western Civilization
- 30.115 Elementary Materials of Music

Physics

- 75.120 Elementary Astronomy for Science and Engineering Students
- 75.190 Introduction to Astronomy
- 75.195 Physics of Music
- 75.291* Physics of the Environment I
- 75.292* Physics of the Environment II
- 75.302* Advanced Physics Laboratory for Non-Physics Science Students
- 75.364* Modern Physics

Russian/Ukrainian

- 36.100 Scientific Russian
- 36.120* Business Russian I
- 36.121* Business Russian II
- 36.116 Introductory Ukrainian
- 36.216 Advanced Ukrainian
- 36.260 Russian Literature in Translation — Nineteenth and Twentieth Centuries
- 36.290 Twentieth-Century East-European Literature in Translation
- 36.360 Studies in Russian Life and Culture
- 36.390 Slavic or Hungarian Language Tutorial

Science

60.100 Man and His Environment

Sociology

53.400 Sociological Analysis

Technology, Society, Environment Studies

59.301 Technology-Society Interaction

59.302 Interaction of Technological Society with the
Natural Environment and its Resources





Awards for Academic Excellence

Medals

The Governor-General's Medal

Awarded annually to the student standing at the head of the graduating class. Donor: His Excellency the Governor-General of Canada. Established 1952.

The Chancellor's Medal

Awarded annually in the name of the Chancellor of the University to a graduating student of outstanding academic achievement.

University Medals

Awarded annually, when merited, to the graduating students standing highest in Arts, Science, Commerce, Journalism, Engineering, and Architecture. Established 1949.

Senate Medals

Awarded, when merited, to graduating students of outstanding academic achievement. Established 1952.

Medal in Engineering (Ontario Association of Professional Engineers)

Awarded annually, when merited, to the graduating student standing highest in Engineering. Established 1961.

Undergraduate Entrance and In-Course Scholarships

Carleton University awards scholarships tenable at the University, normally in the Winter session of the year of offer, to entrance and in-course full-time undergraduate students who have demonstrated a high potential for university studies. The intention of the scholarship policy is to recognize, attract and provide incentives for excellence. The total value of the scholarship or scholarships awarded is determined by the student's most recent academic standing.

Entrance scholarships are valued at \$1,500, \$1,200 or \$900. Students are considered for scholarships on the basis of the marks (usually the interim marks of the final year of high school) which qualify them for acceptance to the University by the Admissions Office.

In-course scholarships are valued at \$1,500, \$1,200, \$900 or \$500. Students are considered on the basis of the grade-point average of the best five full courses (or six for the Faculty of Engineering) taken in the preceding Winter session, providing no core or required courses are eliminated.

In order to hold the foregoing entrance or in-course scholarship, a student must register in five full courses (or six for the Faculty of Engineering).

The University also has some undergraduate in-course scholarship funds available to qualified part-time students. Students should submit applications for part-time scholarships to the Awards Office as soon as possible after the final Winter examinations.

Scholarships and awards of varying amounts which are of interest to students in specific programs are listed below:

Architecture

Blok-Lok Limited Scholarship
Cadillac Fairview Scholarship
Lithwick, Lambert, Sim, Johnston, Moy Scholarship
Ontario Association of Architects Awards
Page and Steele School of Architecture Scholarship
Planning and Construction Department of Carleton University's Award in the Building Sciences
Audrey Stankiewicz Design Award
James Whenham Award

Arts

A. Andras Memorial Grant
Award of the Embassy of Austria
Jack Barwick and Douglas Duncan Memorial Scholarship in Art History
Jack Barwick and Douglas Duncan Memorial Scholarship in Music
Bruce Beecher Memorial Award
Landen Dominic Burnett Memorial Award
Bertha F. Davis Award in Religion
Awards of the Embassy of France
Awards of the Embassy of the Federal Republic of Germany
Award of the High Commission of India
Award of the Embassy of Italy
Harry Kelman Memorial Scholarship
Marston Lafrance Memorial Award in English
Irene McIntyre Memorial Scholarship
Jayashree A. Nagpur Memorial Award
National Council of Jewish Women of Canada Award
Ottawa Women's Canadian Club Scholarship
Award of the Government of Quebec for Excellence in the Study of French
Award of the Embassy of Spain
Award of the Ambassador of Switzerland to Canada
Awards of the Embassy of the Union of Soviet Socialist Republics
Award of the Ambassador of the United States of America
Wainwright Scholarships
Wilgar Memorial Award in English
Gordon J. Wood Scholarships in English
Hume Wrong Scholarship

Commerce

Canada Permanent Trust Company Scholarship
Canadian Tire Corporation Scholarship
Victor S. Castledine Scholarship
Clarkson, Gordon & Company Award
Ford Motor Company of Canada Entrance Scholarships in Commerce
Hudson's Bay Scholarships
Manulife Scholarship in Commerce
D.F. McKechnie Award in Accounting
James Nolan Memorial Award

Charles Pinhey Award
Lawrence Segal Memorial Fund
Thorne, Riddell & Company Scholarships
Touche, Ross & Company Scholarships
Xerox of Canada Limited Scholarship

Engineering

American Society for Metals Award in Engineering
Association of Professional Engineers' Scholarships
Ford Motor Company of Canada Entrance Scholarships in Engineering
Hawker Siddeley Canada Ltd. Engineering Scholarship
Roderick C. McDonald Memorial Scholarship in Engineering
Planning and Construction Department of Carleton University's Award in the Building Sciences
James J. Rattray Memorial Scholarship
Regent Vending Machines Limited Centennial Scholarship
Regent Vending Machines Limited Scholarship
Harry Stevinson Scholarship in Aeronautical Engineering
Vered Foundation Scholarships
Wild Leitz Canada Limited Award in Engineering

Industrial Design

Jack Cook Design Award

Journalism

John E. Bird Memorial Scholarship
CKOY Scholarship in Journalism
The Rachael Elizabeth Edwards Memorial Award
Wilfrid Eggleston Award in Journalism
Bob Farquharson Memorial Award in Journalism
Blair Fraser Memorial Award for Journalism Graduates
Margaret Graham Award
Journalism Writing Style Book Award
Kingston Whig-Standard Award in Reporting
Maclean-Hunter Award in Journalism
National Press Club of Canada Scholarship in Journalism
Ottawa Citizen Scholarship in Journalism
Peter Reilly Scholarship
Roodman Award in Journalism
Thomson Award for Reporting
Union Carbide Canada Scholarship
Kenneth R. Wilson Memorial Award for Journalism Graduates

Science

Dr. M. Ralph Berke Award in Chemistry
Charles Anthony Blundell Betts Memorial Scholarship in Physics
J.P. Bickell Foundation Scholarships
Award of the Canadian Institute of Mining and Metallurgy (Ottawa Branch)
Canadian Society of Petroleum Geologists Undergraduate Student Award
Society of Chemical Industry Award
Chemical Institute of Canada Award

Chevron Standard Scholarship in Geology
Clendinnen Scholarship in Biology
Catherine Daumery Memorial Award for Botanical Collection
E. Alison Flood Award in Physical Chemistry
Ian H. Griffith Memorial Scholarships
Clarence H. Hand Scholarship
Mildred Susan Henry Scholarship
Janet M. Holmes Memorial Scholarship
Dr. Harry Katznelson Memorial Scholarship
Department of Mathematics Entrance Award
Betty Nesbitt Memorial Award in Biology
Richard J. Semple Memorial Award in Mathematics
L.N. Wadlin Scholarship in Mathematics
Elizabeth White Memorial Award for Zoological Collection
Morley E. Wilson Scholarship

Social Sciences

Mrs. George S. Abbott Memorial Award in Law
Carswell Company Book Award in Public Law
Victor S. Castledine Scholarship
Economics Scholarship
Ann Smith Freedman Memorial Award
Mr. and Mrs. Louis L. Goldstein Book Award in Law
J. Carlisle Hanson Award
Herbert G. Heron, Q.C. Award in Law
R.A. MacKay Award in Political Science
Montreal Trust Company of Canada Award in Law
Bank of Nova Scotia, Carleton University Branch Award in Commercial Law
Union Carbide Scholarship
Award of the Ambassador of the United States of America
Vered Foundation Scholarship
Hume Wrong Scholarship

Undergraduate In-Course Scholarships for Part-Time Students

Wing Commander Guy Gibson V.C. Chapter, I.O.D.E. Scholarship
Undergraduate University Scholarships
University Women's Club of Ottawa Scholarships

Undergraduate Scholarships and Awards

Mrs. George S. Abbott Memorial Award in Law
Value \$50. To be awarded annually for proficiency in law courses taken at Carleton University to a student planning to enter law school. Donor: Anonymous. Established 1968 in memory of Mrs. George S. Abbott.

American Society for Metals Award in Engineering
Value \$50. Awarded annually to a student with high standing in the First year of the Engineering course. Donor: Ottawa Valley Chapter, American Society for Metals. Established 1951.

A. Andras Memorial Grant

Value \$900. To support the cost of a research project or paper undertaken by an undergraduate or graduate student attending Carleton University. This grant is awarded in alternate years for a research project in one of the following areas: (a) Jewish studies; (b) trade union history or the democratic socialist movement in Canada. Endowed 1972 in memory of the late Mr. A. Andras, a member of Carleton's Board of Governors. Revised 1978.

Association of Professional Engineers' Entrance Scholarship

Value \$500. Awarded annually to a student of high proficiency with senior matriculation standing who is entering the Engineering course. Donor: The Ontario Professional Engineers' Foundation for Education. Established 1961.

Association of Professional Engineers' Scholarships

Value \$250 each. Three scholarships are awarded annually to Engineering students of high proficiency proceeding from one year of course to another in Carleton University. Donor: The Ontario Professional Engineers' Foundation for Education. Established 1961.

Award of the Embassy of Austria

For excellence in the study of German, a book award is offered annually by the Austrian Embassy in Canada. Established 1960.

Bank of Nova Scotia, Carleton University Branch, Award in Commercial Law

Value \$100. Awarded annually to a student with high standing in courses in the commercial law field. Donor: the Bank of Nova Scotia, Carleton University Branch. Established 1980.

Jack Barwick and Douglas Duncan Memorial Scholarship for Art History

Value \$1,200. To be awarded annually to a student or students in the Department of Art History. The Chairman and faculty members of the Department of Art History are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Established 1972.

Jack Barwick and Douglas Duncan Memorial Scholarship for Music

Value \$1,200. To be awarded annually to a student or students in the Department of Music. The Chairman and faculty members of the Department of Music are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Established 1972.

Bruce Beecher Memorial Award

Value \$250. Awarded annually on the recommendation of the Department of English to outstanding student(s) in the Major or Honours program in English. Donor: Professor Donald A. Beecher. Established 1979.

Dr. M. Ralph Berke Award in Chemistry

The yield of a \$500 fund is awarded each year, if merited, on the recommendation of the Department of Chemistry for a prize to be awarded to an outstanding student majoring in Chemistry proceeding from the Second to the Third year of the degree course. Donor: Dr. M. Ralph Berke. Endowed 1956.

Charles Anthony Blundell Betts Memorial Scholarship in Physics

Value \$1,200. Awarded annually, if merited, to a student of high proficiency in Physics, entering or continuing in Physics Honours or in the Major course, in the Second or subsequent years of the degree course. Donors: Mr. and Mrs. Oliver Betts, Birmingham, England, in memory of their son, Charles Anthony Blundell Betts. Endowed 1964.

J.P. Bickell Foundation Scholarships

The Trustees of the J.P. Bickell Foundation have established in the Department of Geology, Faculty of Science, scholarships for students entering the geological profession, of a possible value of \$1,500 each. The scholarships may be awarded on entrance into the Honours geological sequence at the First, Second- or Third-year levels at Carleton University. The scholarships are payable over two or three years depending on the entrance level.

John E. Bird Memorial Scholarship

Value \$500. Awarded annually to an outstanding student who is proceeding from one year of course to another in a degree program in Journalism. Donor: Mrs. V. Bird. Established 1975.

Henry Birks and Sons (Ontario) Limited Award

Value \$25. Awarded annually to a Carleton University student with a superior academic record who has contributed substantially to extracurricular activities. Donor: Henry Birks and Sons (Ontario) Limited. Established 1951.

Claude Bissell Scholarships

Value \$1,200. These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Blok-Lok Limited Scholarship

Value \$250. Awarded annually to a worthy student entering or enrolled in the School of Architecture. Donor: Blok-Lok Limited, Weston, Ontario. Established 1968.

BP Canada Scholarships

Two scholarships valued at \$500 each. Awarded annually, if merited, to outstanding students proceeding from one year of course to another in a degree program at Carleton University. Donor: BP Canada Limited. Established 1975.

Donald William Buchanan Scholarship

Value \$900. Awarded annually for general competition among students entering Carleton University. Donor: The late Donald William Buchanan. Endowed 1967.

Landen Dominic Burnett Memorial Award

Value \$300. Awarded annually to an outstanding student in Art History selected by Dr. David Burnett. Donor: The Vered Foundation. Established 1979.

Cadillac Fairview Scholarship

Value \$500. Awarded annually to a student of superior standing in the School of Architecture at Carleton University. Donor: Cadillac Fairview Corporation. Established 1977.

D. Roy Campbell Scholarship

Value \$900. Awarded annually, under the terms of the will of the late D. Roy Campbell, for competition among students entering Carleton University with high standing in the senior matriculation examinations or the equivalent. Donor: The late D. Roy Campbell. Established 1962.

Henry Campbell Scholarships

Value \$1,800. Two scholarships awarded annually to full-time students entering or progressing from one year to the next at Carleton University. Provided from the estate of the late Edna Alice Campbell. Endowed 1978.

Canada Permanent Trust Company Scholarship

Value \$800. Awarded to a student entering the final year of his or her program in Commerce, who, in the opinion of the Director of the School in counsel, has demonstrated outstanding proficiency in his or her studies. Donor: The Canada Permanent Trust Company. Established 1975.

Award of the Canadian Institute of Mining and Metallurgy (Ottawa Branch)

Value \$500. The cash prize mentioned is available annually for an essay submitted by full-time undergraduate students at Carleton University and University of Ottawa only. This cash prize is for the best essay on a subject appropriate to any one of the Institute technical divisions, namely the Coal Division, the Geology Division, the Industrial Minerals Division, the Mechanical/Electrical Division, the Metallurgical Society, the Metal Mining Division and the Petroleum Society of CIM. For the purpose of this competition, an undergraduate student may be one who is registered in a Second, Third or Fourth year of an undergraduate program at the time the essay is submitted. Essays must be submitted to the Chairman of the Geology Department of Carleton or University of Ottawa on or before December 31 of each year. Essays need not be papers prepared exclusively for this competition. They may incorporate in part or entirely other papers presented by students as academic exercises. The use of field data or field observations collected by the student during Summer employment is recommended. Established 1956 and 1974.

Canadian Society of Petroleum Geologists Undergraduate Student Award

An award consisting of a certificate and one-year student membership in the Canadian Society of Petroleum Geologists is given by the Society on the recommendation of the Department of Geology, to an undergraduate student who has excelled in fields relating to petroleum geology. Established 1978.

Canadian Tire Corporation Scholarship

Value \$500. Awarded annually on the recommendation of the Director of the School of Commerce to an outstanding student proceeding from one year of course to another in Commerce. Preference will be given to a student who shows ability in the area of Management Studies and Marketing. Donor: Canadian Tire Corporation Limited. Established 1980.

Carleton Alumni Association Scholarship

Scholarships have been provided for undergraduates passing from one year of course to another at Carleton University with high standing. Certain of the scholarships are reserved for students in Honours. Donor: The Alumni Association of Carleton University.

Carleton University Academic Staff Association Scholarship

Value \$1,000. Awarded annually to a student of high proficiency proceeding from one year of course to another in undergraduate studies at Carleton University. Donor: Carleton University Academic Staff Association. Established 1977.

Carling O'Keefe Scholarship

Value \$600. Awarded annually to an outstanding full-time student who is proceeding from one year of course to another at Carleton University. Donor: The O'Keefe Brewing Company Limited. Established 1972.

Carswell Company Book Award in Public Law

Value \$100. Awarded annually to a student with high standing in Public Law courses. Donor: The Carswell Company Limited. Established 1965.

Victor S. Castledine Scholarship

Value \$500. Awarded annually to a student in Economics or Commerce who, in the opinion of the Chairman of the Department of Economics in counsel, has done outstanding work in the area of money, credit and banking studies. Donor: Victor S. Castledine, Esq. Established 1971.

Society of Chemical Industry Award

A gold key with the crest of the Society of Chemical Industry in front and the name of the winner, course, year and university on back is granted to the student who has the highest standing in the final year of the Honours course in Chemistry. The winner will also receive a year's subscription to the Journal, *Chemistry and Industry*. Donor: Canadian Section, Society of Chemical Industry. Established 1961.

Chemical Institute of Canada Award

Value \$25. Awarded as a book prize to the best student proceeding to the final year of the course leading to

the degree of Bachelor of Science with Honours in Chemistry. Donor: The Chemical Institute of Canada. Established 1950.

Chevron Standard Scholarship in Geology

Value \$750. Awarded annually to an outstanding undergraduate student who is entering the final year in Geology at Carleton University. Preference will be given to a student who has displayed an indicated interest in the field of petroleum exploration. Donor: Chevron Standard Limited. Established 1980.

CKOY Scholarship in Journalism

Value \$400. Awarded to a student who is proceeding from one year of course to another in the School of Journalism at Carleton University. Donor: CKOY Limited, Ottawa. Established 1973.

Clarkson, Gordon & Company Award

Value \$100. Awarded annually to the student with the highest standing in the First year of the Commerce course. Donor: Clarkson, Gordon & Company. Established 1962.

Class of '76 Book Prize

Value: To be announced. A book prize (or prizes) given on the recommendation of the Director of the School of Commerce for excellence in the study of Accounting and/or Finance. Donor: Members of the class of '76. Established 1980.

Clendinnen Scholarship in Biology

Value \$100. Awarded annually to an outstanding student proceeding from the Third to Fourth year of the Honours course in Biology at Carleton University. Established 1951, in memory of Mr. and Mrs. T.E. Clendinnen, by their daughter.

Commonwealth Holiday Inns of Canada Limited Entrance Scholarship

Value \$250. Awarded annually to a student entering a full-time undergraduate program who has completed the Ontario Secondary School Honour Graduation Diploma (or its equivalent) and has demonstrated a high potential for university studies. Donor: Commonwealth Holiday Inns of Canada Limited. Established 1975.

Duchess of Connaught Scholarship

The yield from the endowment of this historic scholarship, amounting to approximately \$900 annually, has been made available to Carleton University by the Laurentian Chapter, I.O.D.E. The scholarship is to be awarded to an able student entering Carleton University, and may be held until graduation, if merited; at which time a new award will be made. Donor: Laurentian Chapter I.O.D.E. Endowed at Carleton University, 1960.

Jack Cook Design Award

Value \$100. To be awarded annually, if merited, to the student in Third or Fourth year of the School of Industrial Design who submits the most outstanding design of a product or project related to the field of Interior Design. Donor: Mr. Jack Cook. Established 1978.

Naomi Cook Scholarship Fund

Value \$700. Awarded annually to students with high academic standing entering Carleton University. Donor: The late Naomi Cook. Endowed 1967.

Jennie Shibley Cramm Scholarship

Value \$250. Awarded annually to a female student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

W.H. Cramm Scholarship

Value \$250. Awarded annually to a male student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

Catherine Daumery Memorial Award for Botanical Collection

Value \$50, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology, to a student who has submitted by November 1, an outstanding collection of mounted and identified flowering plants. Donor: Anonymous. Established 1953.

Bertha F. Davis Award in Religion

Value \$400. Awarded annually to an outstanding student enrolled in the Major or Honours program in the Department of Religion at Carleton University. Donor: Bertha Florence Davis. Endowed 1977.

De Waan Foundation Award on Arab Problems

Each year for a period of five years from the first year of award, the De Waan Foundation offers a prize for work of appropriate scholarly level by a senior student on the problems of Arab countries. Annual value, \$100. Students wishing to prepare for this award should first consult the Director of the School of Public Administration. Donor: De Waan Foundation, 1960.

Dobbie Regional Entrance Scholarships

Value \$900. Scholarships will be available for students entering Carleton University, to be divided equally among students from Ontario (except for the City of Ottawa), the Western provinces and the Territories, and Québec and the Atlantic provinces. Donor: The late Jemema Grace Dobbie. Endowed 1967.

Lord Dundonald Chapter, I.O.D.E. Scholarship

Value \$200. Awarded annually to a student of superior standing and general proficiency, entering the final year of a degree course at Carleton University. Donor: Lord Dundonald Chapter, I.O.D.E. Established 1956.

A. Davidson Dunton Scholarships

Value \$1,200. These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Economics Scholarship

Value \$350. Awarded to the student or students entering the final year of the Honours program of studies, whose record of scholarship, in the opinion of the Department of Economics Scholarship Committee, merits special recognition. Established 1978.

Samuel L. Edelson Scholarship

Value \$250. Awarded annually to an outstanding student who is proceeding from one year of course to another at Carleton University. Donor: Members of the family. Established 1974.

Rachael Elizabeth Edwards Memorial Award

Value \$400. Presented annually on the recommendation of the School of Journalism to an outstanding student who is graduating in the School of Journalism one-year degree program. Preference will be given to a female student who has indicated an interest in pursuing a career in the daily newspaper field. Endowed 1974 in memory of Rachael Elizabeth Edwards, a former student in the School of Journalism.

Wilfrid Eggleston Award in Journalism

Value \$350. Awarded to the undergraduate with the best record in the Second-year Journalism degree program. This award is named in honour of Professor Emeritus Dr. Wilfrid Eggleston, former Director of the School of Journalism. Donor: Anonymous. Established 1967.

Bob Farquharson Memorial Award in Journalism

Value \$400. Awarded annually to an outstanding student enrolled in a full-time undergraduate program in the School of Journalism at Carleton University. Preference will be given to a Third-year student who has indicated an interest in pursuing a career in newspaper and magazine journalism. Donors: Canadian Managing Editors Conference and the Toronto Globe and Mail. Established 1980.

E. Alison Flood Award in Physical Chemistry

Value to be announced. Awarded annually to the best student in the Second-year physical chemistry laboratory. Student to be selected by the Department of Chemistry on the basis of recommendations of the course instructor and the laboratory demonstrators in the Second-year laboratory. Donors: Friends and former students of the late Dr. E.A. Flood, a principal scientist at the National Research Council, who in 1969 became a senior demonstrator in the Chemistry Department. Endowed 1980.

Ford Motor Company of Canada Entrance Scholarship in Commerce

Value equivalent to tuition fee. Four scholarships awarded annually to outstanding students entering the School of Commerce at Carleton University in a full program of undergraduate studies. Donor: Ford Motor Company of Canada. Established 1976.

Ford Motor Company of Canada Entrance Scholarship in Engineering

Value equivalent to tuition fee. Three scholarships awarded annually to outstanding students entering the Faculty of Engineering at Carleton University in a full program of undergraduate studies. Donor: Ford Motor Company of Canada. Established 1976.

Lilian I. Found Award for Poetry

Value \$25. Offered annually for the best lyric of fifty lines or less submitted by an undergraduate of Carleton University by March 15. Details may be obtained from the Department of English. Donor: The late Mrs. Lilian I. Found. Endowed 1950.

Awards of the Embassy of France

For excellence in the study of French, two book awards are offered annually by the Embassy of France in Canada. Donor: Embassy of France. Established 1978.

Blair Fraser Memorial Award for Journalism Graduates

Value \$375. Offered annually to a Journalism student in his or her graduating year who, in the opinion of a board of selection, shows a marked aptitude for and interest in political reporting at the national and international level. Endowed 1969, in memory of Blair Fraser, Ottawa editor of *Maclean's Magazine*, by a group of his friends.

Ann Smith Freedman Memorial Award

Value \$100. Awarded to the student in Psychology who has gained the highest standing in the experimental paper in Psychology 49.200 during the academic year. Donors: Mr. and Mrs. Jarvis Freedman. Established 1958.

Jacob Freedman Scholarships

Value \$500-\$1,200. Awarded annually to outstanding students who are proceeding from one year of course to another at Carleton University. Donor: The late Jacob Freedman. Endowed 1967.

Friends of Carleton Scholarships

Scholarships have been provided for general competition among students entering Carleton University at the senior matriculation level. Donor: The Friends of Carleton University. Established 1967.

Awards of the Embassy of the Federal Republic of Germany

For excellence in the study of German, book awards are offered annually by the Embassy of the Federal Republic of Germany in Canada. Established 1955.

Clarence C. Gibson Scholarships

Value \$1,200. These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

James A. Gibson Scholarships

Scholarships have been provided for superior students passing into the final year of the undergraduate course at Carleton University. The scholarships are named in honour of Dr. James A. Gibson, former Dean of Faculty of Arts and Deputy to the President of Carleton University. Donor: Carleton University.

David A. Golden Scholarships

Value \$1,200. These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Mr. and Mrs. Louis L. Goldstein Book Award in Law
Awarded annually to a deserving Carleton University student in a Law program, on the recommendation of the Chairman of the Department. Donors: Mr. and Mrs. Louis L. Goldstein. Established 1975.

Margaret Graham Award

Value \$100. Awarded annually to the undergraduate student with the best overall academic average proceeding from Third to Fourth year of the four-year Bachelor of Journalism program. This award is named in honour of Margaret Graham who was one of the founding members of the Canadian Women's Press Club in 1904. Donor: The Media Club (Ottawa Branch). Established 1977.

J. Lorne Gray Scholarships

Value \$1,200. These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Ian H. Griffith Memorial Scholarships

Value totalling \$1,000. Awarded annually, if merited, to outstanding students proceeding from one year of course to another in a degree program in the Faculty of Science, preferably in the Integrated Science Studies program, and having some appreciation of the humanities. Donors: Mr. and Mrs. J. Griffith in memory of their son Ian H. Griffith, B.Sc., Carleton 1976.

Clarence H. Hand Scholarship

Value \$200. Awarded annually to a student for excellence in studies in cryptogamic botany. Donor: Anonymous. Established 1972, in honour of the late Clarence H. Hand, a skilled high school teacher and amateur bryologist.

J. Carlisle Hanson Award

Value \$100. Awarded annually to an outstanding student proceeding into a combined Honours program in Law and History or Economics at Carleton University. Donor: J. Carlisle Hanson. Established 1973.

Hawker Siddeley Canada Ltd., Engineering Scholarship
Value \$500. Awarded on the recommendation of the Faculty of Engineering to an outstanding student proceeding from the Third to the Fourth year in Electrical or Mechanical Engineering. Donor: Hawker Siddeley Canada Ltd. Established 1975.

Mildred Susan Henry Scholarship

Value \$100. To be awarded annually to a student entering the Fourth year of the Honours program in the Faculty of Science. Endowed 1966 in memory of the late Mildred Susan Henry.

Herbert G. Heron, Q.C. Award in Law

Value \$200. Awarded annually to a student in the Department of Law. Applicants and nominees for this award will be assessed by the Chairman of the Department of Law in conjunction with his Committee. Established 1975 in memory of Herbert G. Heron, Q.C.

Janet M. Holmes Memorial Scholarship

Value \$300. Awarded annually, when merited, to a promising student proceeding from the Third to the Fourth year of the Honours Chemistry program at Carleton University. Candidates will be selected by the Department of Chemistry. Donors: Professor and Mrs. J.M. Holmes. Established July 1973.

C.V. Hotson Memorial Scholarship

Value \$300. Awarded annually to an undergraduate student who maintains high academic standing and is active in student affairs. Donated by Carleton alumni and other friends in memory of Mr. Hotson, a 1950 Carleton Journalism graduate and former member of the Students' Council who returned to Carleton in 1953 to become administrative assistant to the president and executive secretary of the Alumni Association, a position he held until his death in October, 1960.

Wing Commander Guy Gibson V.C. Chapter, I.O.D.E. Scholarship

Value \$125. Awarded annually to a part-time student enrolled at Carleton University who has demonstrated a high potential for university studies. Donor: Wing Commander Guy Gibson Chapter, I.O.D.E. Established 1976.

Hudson's Bay Scholarships

Value \$1,000 each. Three scholarships awarded annually to outstanding students from the Ottawa region entering the First year of Commerce at Carleton University. Donor: The Hudson's Bay Company. Established 1976.

Award of the High Commission of India

For excellence in the study of Sanskrit, a book award is offered annually by the High Commission of India. Established 1976.

International House Award

Value \$200. To be awarded to a student attending Carleton University on a student visa in his or her graduating year, who, in addition to maintaining the academic levels of the degree program, has been an active participant in extracurricular activities in the University. Donor: International House. Endowed 1972.

Award of the Embassy of Italy

For excellence in the study of Italian, a book award is offered annually by the Embassy of Italy in Canada. Established 1971.

Journalism Writing Style Book Award

Value \$50. Awarded annually as a book prize to a Journalism 28.220 student, the writing style of whose class assignments shows exceptional merit. Donor: Anonymous. Established 1970.

Dr. Harry Katznelson Memorial Scholarship

Value \$100. Awarded annually to an outstanding student proceeding into an advanced year in the Honours Biology program. Donors: Friends of the late Dr. Harry Katznelson, B.S.A., M.Sc., Ph.D., F.R.S.C., Director of the Microbiology Research Institute, Federal Department of Agriculture. Established 1965.

Harry Kelman Memorial Scholarship

Value \$250. Awarded annually to an outstanding student in Second year or proceeding from Second to Third year and who is majoring in Art History at Carleton University. Donor: Friends of the late Mr. Harry Kelman. Established 1973.

Marston Lafrance Memorial Award in English

Value \$150. Awarded annually, if merited, on the recommendation of the Department of English to outstanding student(s) entering the Fourth year of the Honours English program at Carleton University. Established 1976 in memory of the late Dr. Marston Lafrance, former Dean of the Faculty of Arts, Division I.

Lithwick, Lambert, Sim, Johnston, Moy Scholarship

Value \$300. Awarded annually to an outstanding student who has completed the Third year of course in the School of Architecture at Carleton University. Donors: Lithwick, Lambert, Sim, Johnston, Moy, Architects. Established 1968.

Francis C.C. Lynch Scholarships

Scholarships have been established for open competition among students entering or proceeding from one year to another in Arts, Social Sciences, Science, Commerce, Journalism, Engineering or Architecture. Donor: The late Francis C.C. Lynch. Endowed 1967.

Gavin Scott Macfarlane Memorial Scholarship

Value \$900. Awarded annually to an outstanding student, preferably in Honours, who is proceeding from one year of course to another at Carleton University. First donated 1957, by Mrs. G.S. Macfarlane in memory of her husband, Lieutenant-Colonel Gavin Scott Macfarlane.

R.A. MacKay Award in Political Science

Value \$150. Awarded annually by the Department of Political Science to a student in good standing in accordance with terms that the Department may from time to time establish. Donor: The late Dr. R.A. MacKay. Established 1977.

Chalmers Jack Mackenzie Scholarships

Value \$1,500. These scholarships are named in honour of a former Chancellor of Carleton University and are

awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Maclean-Hunter Award in Journalism

Value \$1,000. Awarded annually to a student entering the one-year program in Journalism for university graduates mainly on the basis of previous academic performance. Donor: Maclean-Hunter Publishing Company Limited. Established 1967.

Murdoch Maxwell MacOdrum Scholarships

Value \$1,200. These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

ManuLife Scholarship in Commerce

Value \$1,000. Awarded annually to an outstanding student entering the Bachelor of Commerce program at Carleton University. Donor: The Manufacturers Life Insurance Co. Established 1976.

Department of Mathematics Entrance Award

Value \$500. One or more annual awards for a student or students entering the First year of an Honours or Major program in Mathematics at Carleton University. The selection of the recipient or recipients will be based on an annual Mathematics competition for high school students with the decision being recommended by the Chairman of the Department of Mathematics in consultation with the Awards Officer and the Department's High School Liaison Committee. Donor: Members of the faculty in the Department of Mathematics. Established 1973.

Roderick C. McDonald Memorial Scholarship in Engineering

Value \$300. Awarded annually to an engineering student of high proficiency entering in the Fourth year of course. Established by the University in memory of the late Roderick C. McDonald, who before his death in 1961, was a member of the Faculty of Engineering.

D.F. McKechnie Award in Accounting

A book prize to be awarded, when merited, to a student in Commerce for proficiency in the study of accounting. Donor: D.F. McKechnie, C.A. Endowed 1951.

Dr. Frederick William Charles Mohr Scholarships

Scholarships have been made available for annual competition among students entering Carleton University or proceeding from one year of course to another and who come from communities within the following Ontario and Quebec counties. Ontario: Renfrew, Russell, Prescott, Glengarry, Stormont, Dundas, Grenville, Carleton, Lanark, Nipissing, Leeds. Quebec: Pontiac, Gatineau, Hull, Papineau, Argenteuil, Temiskaming. These awards are provided through the bequest of the late Dr. F.W.C. Mohr. Donor: The Frederick W.C. Mohr Estate. Endowed 1963.

Montreal Trust Company of Canada Award in Law
Value \$500. Awarded annually to a student who, in the opinion of the Department of Law, has shown overall outstanding academic achievement in studies in Law. Donor: The Montreal Trust Company of Canada. Established 1978.

Jayashree A. Nagpur Memorial Award
Value \$25. Awarded annually on the recommendation of the Department of English to an outstanding student in the English program at Carleton University. Donor: Anant L. Nagpur. Established 1976.

National Council of Jewish Women of Canada Award
Value \$100. Awarded on the recommendation of the Department of Religion to a student achieving high standing in the area of Judaic studies. Donor: National Council of Jewish Women of Canada, Ottawa Section. Established 1973.

Betty Nesbitt Memorial Award in Biology
Value \$400. Awarded annually to a student entering the Third year of a Bachelor's degree program in Biology; who, in the opinion of the Department has shown exceptional promise in the field of Biology. Preference will be given to a student in a faculty other than the Faculty of Science. Donors: Friends of the late Mrs. H.H.J. Nesbitt. Endowed 1976.

James Nolan Memorial Award
Value \$500. Awarded annually to a student in Commerce for proficiency in the study of Accounting. Donors: The family and friends of the late James P. Nolan, B.Com. Carleton 1977. Endowed 1977.

Michael Oliver Scholarships
Value \$1,200. These scholarships are named in honour of a former President of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1979.

Ontario Association of Architects Awards
Value \$500. Awarded annually to a deserving student enrolled in the Second year in the School of Architecture an award of \$250; and to a deserving student enrolled in the Third year of the School of Architecture an award of \$250. Donor: Ontario Association of Architects. Established 1972.

Ottawa Citizen Scholarship
A scholarship valued at \$2,400 awarded annually, if merited, to a student entering Carleton University from a high school in any one of the following counties in the Ottawa district: nine in Ontario (Carleton, Dundas, Glengarry, Grenville, Lanark, Prescott, Renfrew, Russell and Stormont) and four in Quebec (Gatineau, Hull, Papineau and Pontiac). A student admitted with senior matriculation standing will receive \$800 per year for a period of three years, always provided that the student is registered as a regular full-time student at Carleton University and maintains a satisfactory academic standing. Donor: The Ottawa Citizen. Established 1955.

Ottawa Citizen Scholarship in Journalism
Maximum value \$2,400. Awarded annually to a student entering First year of Journalism. The winner will receive \$600 a year until graduation provided the student is registered as a full-time student at Carleton University and maintains a satisfactory academic standing in the Journalism program. Donor: The Ottawa Citizen. Established 1969.

Ottawa Ladies' College Scholarships
Value \$500-\$1,200. Provided for annual competition among undergraduates for the various disciplines. Endowed 1967.

Ottawa Women's Canadian Club Scholarship
Value \$700. Awarded annually to an outstanding student who is proceeding from one year of course to another in the undergraduate Canadian Studies Program. Endowed 1946. Revised 1977.

The Page and Steele School of Architecture Scholarship
Value: \$300. Awarded annually to an outstanding student enrolled in the school of Architecture at Carleton University. Donor: Page and Steele Architects. Established 1967.

Lester Bowles Pearson Scholarships
Value \$1,500. These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Charles Pinhey Award
Awarded to a student entering the First year of Commerce at Carleton University from a secondary school in the Ottawa-Carleton Regional Municipality. The sum of \$300 will be awarded in the student's first year, and \$200 for each succeeding year provided the student is registered as a full-time student at Carleton University and maintains scholarship levels in the Commerce program. This award will be based on high academic performance and on financial need. Donor: The Ottawa Board of Trade. Established 1974.

Planning and Construction Department of Carleton University's Award in the Building Sciences
Value \$200. Awarded annually to an undergraduate student in Engineering or Architecture to assist with the cost of an energy-related research project. The Dean of Engineering will select the recipient in each year. Preference shall be given to the student whose graduate year project is deemed to have the most merit in furthering the efficient use of energy in the field of Building Science. Donor: Planning and Construction Department of Carleton University. Endowed 1980.

National Press Club of Canada Scholarship in Journalism
A sum equal to tuition fees to be awarded annually to a student entering the final year of Journalism or News Photography course in a Canadian college or univer-

sity. The name of one Carleton University student will be submitted annually to a selection panel of National Press Club members. Donor: The National Press Club of Canada. Established 1965.

Award of the Government of Quebec for Excellence in the Study of French

A book award is offered annually by the Minister of Cultural Affairs of the Province of Quebec. Established 1968.

James H. Rattray Memorial Scholarship

Value \$500. Awarded annually to a student entering First-year Engineering at Carleton University. Donor: The late James H. Rattray, M.C. Endowed 1961.

Regent Vending Machines Limited Centennial Scholarship

One scholarship of \$150 awarded annually to an outstanding student in Engineering proceeding from Third to Fourth year. Donor: Regent Vending Machines Limited. Established 1967.

Regent Vending Machines Limited Scholarship

Value \$200. Awarded annually to an outstanding Engineering graduating student. Donor: Regent Vending Machines Limited. Established 1954.

Peter Reilly Scholarship

Value \$500. Awarded annually to a student entering either the Third or Fourth year of a degree course in the School of Journalism who shows talent, aptitude and concern for journalistic disciplines. Preference will be given to a student entering Fourth year who has demonstrated a potential for effective use of the medium of television, current affairs and/or documentary programs. Donors: Friends of the late Peter Reilly. Endowed 1978.

Roodman Award in Journalism

Value \$50. Awarded annually for excellence in reporting to a Second or Third year student in the School of Journalism. Donors: Mr. and Mrs. Herman S. Roodman. Established 1965. Revised 1980.

James and Jane Fraser Roy Scholarships

Value \$500-\$1,200, depending on the academic standing of the candidates. Awarded annually, if merited, to outstanding students proceeding from one year of course to another in a degree program at Carleton University. Donor: The late Jean Roy. Endowed 1975.

J. Lansing Rudd Scholarship

Value \$900. Awarded annually to a superior student progressing from one year of course to another at Carleton University. Donor: The late J. Lansing Rudd. Endowed 1967.

Lawrence Segal Memorial Fund

Value \$15. Established as a book prize for a student enrolled in the School of Commerce. Donors: The friends of the late Lawrence J. Segal, B.Com. Carleton, 1961. Endowed 1970.

Richard J. Semple Memorial Award in Mathematics

Value \$250. Awarded annually to an outstanding student

enrolled in an Honours Mathematics program and proceeding to Third or Fourth year of studies at Carleton University. Donors: Friends and family of the late Richard J. Semple. Endowed 1977 in memory of Richard J. Semple, a long-time faculty member of the Department of Mathematics.

Shell Canada Entrance Scholarships

Value \$1,000. Five scholarships awarded annually to students entering a full-time undergraduate program and who have demonstrated high academic performance. These are continuing scholarships for not more than four years provided the candidates maintain a high academic standing and are registered in a full program of undergraduate courses during the Winter session. Donor: Shell Canada Limited. Established 1975.

Hyman Soloway Scholarships

Value \$1,200. These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1979.

Harry S. Southam Scholarships

Value \$1,500. These scholarships are named in honour of a former Chancellor of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Mercy Neal Southam Entrance Scholarships

Entrance scholarships will be awarded annually if merited, to students entering the First year of Arts, Social Sciences, Journalism, Commerce, Science, Engineering or Architecture at Carleton University. Established in 1949. Under the terms of bequest of the late Wilson Mills Southam, the scholarships are in memory of his grandmother, Mercy Neal Southam.

Award of the Embassy of Spain

For excellence in the study of Spanish, a book award is offered annually by the Spanish Embassy in Canada. Established 1960.

Audrey Stankiewicz Design Award

Value \$500. This award has been made available to a Third- or Fourth-year student in the School of Architecture once every two years commencing in February, 1971. The award is made to honour the memory of the late Audrey Stankiewicz who had a continuing critical interest in product, visual and industrial design and architecture. Donor: Mr. Z. Matthew Stankiewicz. Established 1970.

E.W.R. Steacie Scholarships

Value \$1,200. These scholarships are named in honour of a former Chairman of the Board of Governors of Carleton University and are awarded to outstanding

students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Ben and Mary Steinberg Foundation Scholarships
Awarded to outstanding students who may be in need of financial assistance in the furtherance of their studies. Established 1978.

Harry Stevinson Scholarship in Aeronautical Engineering
Value \$1,000. Awarded annually on the recommendation of the Chairman of the Department of Mechanical and Aeronautical Engineering to a student enrolled in Aeronautical Engineering at Carleton University. Donor: Leigh Instruments Limited. Established 1980.

Irene Gertrude Stitt Scholarship Fund
Value \$500. Awarded annually to students of high proficiency proceeding from one year of course to another at Carleton University. The fund has been made possible by a bequest of the late Edith May Stitt, in memory of her sister, Irene G. Stitt. Endowed 1966.

Awards of the Ambassador of Switzerland to Canada
For excellence in the study of French, German, and Italian, book awards are offered annually by the Ambassador of Switzerland to Canada. Established 1953.

Thomson Award for Reporting
Value \$300. Awarded annually to a student proceeding from Third- to Fourth-year Honours Journalism judged to be outstanding in reporting. Donor: Thomson Newspapers. Established 1970.

Thorne, Riddell & Company Scholarships
Two scholarships valued at \$400 and \$300 each. The scholarship of \$400 is awarded annually to the Third-year Commerce student with the highest average marks. The scholarship of \$300 is awarded to the Third-year Commerce student with the second highest average marks. Donor: Thorne, Riddell & Company. Established 1969.

Henry Marshall Tory Award
Presented annually to an outstanding graduating student who has shown a high degree of academic application, has indicated an interest in the University by broad participation in extracurricular activities of a constructive nature, has indicated qualities of leadership, and has attended Carleton University for at least three Winter sessions. Each candidate is nominated by three members of the Students' Association and selection is made by a committee composed of the President of the University, the Dean of Student Services, a member of the Faculty chosen by Senate and three students chosen by the Students' Council. The winner's name is inscribed on the master trophy and the student receives a miniature replica. The award was established in 1950 by the Students' Council of Carleton University.

Henry Marshall Tory Scholarships
Value \$1,200. These scholarships are named in honour of the first President of Carleton University and are awarded to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton. The scholarship may be renewed for a total of four years provided sufficient academic standing is maintained. Established 1975.

Touche, Ross & Company Scholarship
Value \$250. Awarded to a student who is proceeding from one year of course to another in the degree program in Commerce, and who intends upon graduation to study for the qualification of chartered accountant. The award will be made to the student whose character, ability, academic records, and other qualities are, in the opinion of the School of Commerce, those needed by a chartered accountant. Preference will be given to a student with these qualifications who will be entering the final year of course. Applications should be submitted to the Chairman of the School of Commerce before March 1. Donor: Touche, Ross & Company. Established 1962.

Undergraduate In-Course Scholarships for Part-Time Students

Carleton University offers a number of scholarships, tenable at the University, to students continuing in undergraduate studies who have completed the equivalent of at least five courses through part-time study beyond entrance requirements, at the University, and have demonstrated a high potential for university studies. To be eligible the candidate must have maintained a high academic standing and be registered as a part-time student. Value: Academic tuition fee for one or more courses (non-transferable).

Union Carbide Canada Scholarship
Value \$500. Awarded annually, when merited, to an outstanding Journalism student, with preference given to a student who shows promise as a future reporter of the Canadian business scene. Donor: Union Carbide Canada Limited. Established 1976, revised 1979.

Awards of the Embassy of the Union of Soviet Socialist Republics

For excellence in the study of Russian, awards are offered annually by the Embassy of the Union of Soviet Socialist Republics. Established 1963.

Award of the Ambassador of the United States of America

A book award is offered annually by the American Ambassador to Canada to a graduating student who has distinguished himself in the fields of United States history, economics, or political science. Established 1968.

University Women's Club of Ottawa Scholarships

Three scholarships valued at \$300 each. Awarded annually to women students at Carleton University continuing in undergraduate studies who have completed the equivalent of at least five courses beyond entrance requirements at the University and have

demonstrated a high potential for university studies. To be eligible the candidate must have maintained a high academic standing and be registered as a part-time student. Donor: University Women's Club of Ottawa. First established in 1952 in honour of Dr. Alice E. Wilson.

Vered Foundation Scholarships

Two scholarships valued at \$500 each; one awarded annually, if merited, to an Engineering student in Civil Engineering; the second scholarship awarded annually, if merited, to a student who is proceeding from one year of course to another in a degree program in Political Science. Donor: The Vered Foundation of Ottawa. Established 1975.

L.N. Wadlin Scholarship in Mathematics

Value \$600. Awarded annually to a student proceeding from one year to another at Carleton University who has shown excellence in the study of Mathematics. Donor: The late Lorenzo N. Wadlin. Endowed 1965.

Wainwright Scholarships

Value \$500-\$1,500 depending on the academic standing of the candidates. Awarded annually, if merited, to outstanding students proceeding from one year of course to another in a degree program in History. Courses in Canadian History must form a substantial component of this program. Donor: Miss Dora A.I.S. Wainwright. Established 1974.

James E. Whenham Award

Value \$200. Awarded annually to a student of superior standing enrolled in the School of Architecture, Carleton University. Donor: James E. Whenham. Established 1968.

Kingston Whig-Standard Award in Reporting

Value \$250. Awarded annually to the Journalism student in any reporting course for the story judged the best single assignment turned in. Donor: Kingston Whig-Standard. Established 1970.

Elizabeth White Memorial Award for Zoological Collection

Value \$50, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology to a student who has submitted, by November 1, an outstanding collection of insects or arachnids, properly preserved and identified. Donor: Anonymous. Established 1953.

Wild Leitz Canada Limited Award in Engineering

A set of stainless steel drawing instruments is awarded annually to a student in First-year Engineering at Carleton University judged most worthy of the award by the Faculty of Engineering. Donor: Wild Leitz Canada Limited. Established 1960.

Wilgar Memorial Award in English

A book prize to be awarded to a Carleton University undergraduate who has shown excellence in essay-writing. Established 1951, in memory of the late W.P. Wilgar, assistant professor of English at Carleton University, 1948-50. Endowed 1952.

Kenneth R. Wilson Memorial Award for Journalism Graduates

Value \$900. Offered annually to a student graduating in Journalism who, in the opinion of a board of selection, shows exceptional promise as a future reporter and interpreter of Canadian affairs. Endowed 1953, in memory of Kenneth R. Wilson, Ottawa Editor of *The Financial Post*, by a group of his personal friends.

Morley E. Wilson Scholarship

Value \$900. Awarded annually to an outstanding student in Honours Geology who is proceeding from one year of course to another at Carleton University. Donor: the late M.E. Wilson, Sessional Lecturer in Geology at Carleton University, 1947-1953. Endowed 1975.

Gordon J. Wood Scholarships in English

Value \$300 each. One to a full-time student in English proceeding from Second to Third year, who has taken at least three courses in English at Carleton; one to a full-time student in English proceeding from Third to Fourth year, who has taken at least four courses in English at Carleton University. The assessment is made on the basis of overall grades for the year, including Summer courses (if any) from the previous Summer. English marks will be given particular consideration if necessary in the ranking of qualifying students. Donor: Gordon J. Wood, Professor of English, Carleton University. Established 1974.

Hume Wrong Scholarship

Value \$900. Established by Mrs. Hume Wrong in memory of her late husband. Awarded annually to the leading student in the Third year of History or Political Science, proceeding to his or her final Honours year. Donor: The late Mrs. Hume Wrong. Endowed 1962.

Xerox Canada Inc. Scholarship

Value \$1,000. Awarded to a Canadian citizen or landed immigrant entering the final year of the degree course in Commerce. The sum of \$750 will be awarded to the recipient and \$250 for the unrestricted use of the School of Commerce. Should a graduate program be established in the School of Commerce at a later date this scholarship will be awarded as a fellowship in the course leading to the most advanced degree offered. Donor: Xerox Canada Inc. Established 1970, revised 1978.

Nathan and Sara Zelikovitz Award

Value \$40. Awarded to an outstanding undergraduate student registered in a full-time program at Carleton University. Donor: Nathan Zelikovitz. Endowed 1979.

Bursaries

A. Andras Memorial Bursary

Awarded annually to an undergraduate student attending Carleton University, who is in need of financial assistance and whose parent is a member of a trade union which is affiliated to the Canadian Labor Congress. Endowed 1972, in memory of the late Mr. A. Andras who was a member of Carleton's Board of Governors.

ATA Trucking Industry Educational Foundation Bursary Fund

To provide bursaries for First- or Second-year students who, due to extenuating circumstances, are deserving of financial assistance, and without such assistance would be unable to continue their studies. Donor: ATA Trucking Industry Educational Foundation Inc. Established 1959.

Atkinson Charitable Foundation Bursary Fund

Awarded to assist students of Carleton University. Terms of award are as follows: (1) In addition to scholastic merit and financial need, goal and promise will be considered in selecting recipients. (2) Candidates must be residents of Ontario. (3) An applicant must have completed at least one academic year and be enrolled as a full-time undergraduate in any course at Carleton University. (4) For one of the awards, preference will be given to candidates intending later to pursue studies in Theology. Donor: The Atkinson Charitable Foundation. Offered for the first time in 1951, as an experiment, in the provision of financial aid to students.

Nurse "Bill" Bayley Memorial Fund

The fund is to provide for assistance in emergencies for students requiring dental and medical care. Endowed 1974 by friends and students, this award is named in honour of the late Kathleen Bayley, a member of the Counselling and Health Services from 1965 to the time of her death June 7, 1973.

R.A. Beamish Bursary

Awarded annually to a student entering or progressing from one academic year to another who, without financial assistance, could not continue his or her formal education. To be eligible, an applicant must be a resident of one of the eleven eastern counties of Ontario (Renfrew, Frontenac, Lanark, Leeds, Carleton, Grenville, Russell, Dundas, Prescott, Glengarry, Stormont). Donor: The R.A. Beamish Foundation. Endowed 1951.

Euphemia Bell Bursary Fund

To provide bursaries to deserving students in financial need. The fund has been made possible by a bequest of the late Euphemia Bell. Endowed 1978.

Beta Sigma Phi Sorority Bursary

Value \$250. To be awarded to a deserving female student majoring in English. Donor: The City Council of Beta Sigma Phi Sorority. Established 1964.

J.P. Bickell Foundation Bursary Fund

The Trustees of the J.P. Bickell Foundation have established bursaries in the Faculty of Science. An applicant must be taking a normal sequence of courses leading to a degree in Geology and must have competent academic standing. Carleton students may obtain full details of the bursary from the Awards Office. Donor: J.P. Bickell Foundation, Toronto. Established 1956.

Birks Family Foundation Bursaries

The Birks Family Foundation has established a plan of annual contributions to the Student Aid Fund of recognized Canadian universities and colleges for the creation of the Birks Family Foundation Bursaries. The bursaries are awarded by the Foundation on the recommendation of the University Scholarship Committee and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

Gretta Boyd Memorial Bursary

Value \$100. First awarded in 1969-70 to an undergraduate student in any year or faculty with good academic standing and in need of financial assistance. Donor: Kiwanis Club of City View. Established 1969 in memory of the late Gretta Boyd.

Nathan Braham Bursary

Awarded annually to an entering or returning student, with superior academic standing who is in need of financial assistance. The bursary has been made possible by a bequest of Mr. Nathan Braham. Endowed 1964.

Donald William Buchanan Bursary

Awarded annually to a student entering or progressing from one academic year to another, and who is in need of and deserving of assistance to continue studies as a full-time student. Donor: The late Donald William Buchanan. Endowed 1967.

Carleton University Academic Staff Association Bursaries

Two bursaries valued at \$235 each. Awarded annually to full-time students proceeding from one year of course to another and requiring financial assistance. Donor: Carleton University Academic Staff Association. Established 1977.

Carleton University Faculty Wives Association Bursary

Value \$250. Awarded to a student in good academic standing and in financial need, who is proceeding from First to Second year of studies at Carleton University. Donor: Carleton University Faculty Wives Association. Established 1977.

Carleton University Refugee Student Bursary

Value \$2,500. To be awarded annually on the recommendation of the World University Service of Canada to a refugee student entering or continuing his program at Carleton University, who is in need of financial assistance.

Edward Godfrey Carty Bursary

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her husband, Edward Godfrey Carty. Endowed 1964.

Maurice Frederick Carty Bursary

Awarded annually to a student in course who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Maurice Frederick Carty. Endowed 1957.

Corporation House Limited Bursary

To be awarded annually to a good student in need of financial assistance, who is, in addition, a son or daughter of a parent employed in the public service of Canada, or in a federal corporation or agency, or serving in the Armed Forces of Canada. Donor: Corporation House Limited. Established 1962.

Engineers' Wives Association Bursary

Value \$600. Awarded annually to deserving students enrolled in the Faculty of Engineering. Donor: Engineers' Wives Association of Ottawa. Established 1959.

Lillian Fallis Bursary

Value \$450. Awarded annually to a deserving student(s) proceeding from one year of course to another in the School of Commerce at Carleton University and who is in need of financial assistance. Donors: The family of the late Duncan H. Maclaren, a graduate of the School of Commerce. Endowed in 1980 in honour of Mrs. Lil Fallis a longtime member of staff in the School in recognition of her special interest and support of students.

C.A. Fitzsimmons and Company Limited Bursary

Value \$100. Awarded annually to a competent student entering Carleton University who, without financial assistance, could not continue his or her formal education. Donor: C.A. Fitzsimmons and Company Limited, Ottawa. Established 1960.

Friends of Carleton Bursary Fund

A sum to provide bursaries for deserving students in need of financial assistance. This fund has been made possible by contributions from the Friends of Carleton University. Established 1967.

The Mary C. Grant Bursary (Laurentian Chapter, I.O.D.E.)

Awarded annually to a particularly able student entering Carleton University or proceeding from one year of course to another, and requiring financial assistance to complete his or her studies. The bursary has been established in honour of Mary C. Grant. Donor: The Laurentian Chapter, I.O.D.E. Established 1962.

IBM-Canada Bursary Program

IBM Canada Ltd. makes an annual grant of \$2,000 for bursaries to students registered in a full-time course at the University who have satisfactory standing and who demonstrate financial need. Application may be made through the Awards Office. Donor: IBM Canada Limited. Established 1963. Revised 1979.

Knights of Pythias, Aurora Lodge No. 53 Bursary

Value \$100. Awarded to a good student, progressing from one year of course to another, who needs financial assistance to continue his or her studies. Donor: Knights of Pythias, Aurora Lodge No. 53. Established 1960.

Patricia Larmonth Memorial Bursary

Value \$100. Awarded annually to a deserving student enrolled at Carleton University, and who is in need of financial assistance. Donor: Ottawa Women's Canadian Club. Established 1971.

Litton Systems (Canada) Limited Bursaries

Two bursaries valued at \$150 each. Awarded annually to students with good academic standing, enrolled in the Faculty of Engineering, and who are in need of financial assistance. Preference will be given to those students who plan to major in Electrical or Mechanical Engineering. Donor: Litton Systems (Canada) Limited. Established 1967.

Jean A. Loates Bursary

Value \$200. Awarded annually to a deserving student entering Carleton University or proceeding from one year of course to another and requiring financial assistance to complete his or her studies. Donated by friends and colleagues of Jean Loates to mark her retirement in 1977. Mrs. Loates is a Carleton graduate and had a twenty-six year career at the University, first as Student Personnel Officer and from 1966 as Awards Officer. Endowed 1977.

Ottawa Citizens' War Services Committee Bursary

An annual sum of approximately \$300 is available to assist veterans, their dependents or descendants, who are students in good standing at Carleton University and are in need of financial assistance. Endowed 1948.

Ottawa Superfluity Shop Bursaries

An annual sum of approximately \$1,500 is available to provide bursaries for veterans of World War I or World War II, or for the descendants of such veterans, who are students in good standing at Carleton University and in need of financial assistance. Endowed 1947.

Phillips Bursary

The annual yield of a fund of \$5,000 made available to Carleton University by Miss L.A. Phillips. The bursary is to be awarded each year to a student with good academic standing who is in need of financial assistance. Endowed 1962.

James H. Rattray Bursary Fund

To provide bursaries for students in Science and Engineering, with certain areas of preference. Donor: The late James H. Rattray, M.C. Endowed 1961.

J. Lansing Rudd Bursary

Value \$300. Awarded annually to a good student progressing from one year of course to another who needs financial assistance to continue his or her studies. Donor: The late J. Lansing Rudd. Endowed 1967.

SDL Bursaries

Value \$1,000 annually. To provide four bursaries valued at \$250 each awarded to students with good academic standing and who are in need of financial assistance. Donor: Systems Dimensions Limited. Established 1975.

Abraham and Mary Shaffer Bursary

Awarded annually to a good student entering Carleton University or proceeding from one year of course to another, and requiring financial assistance to complete his or her studies. Donor: The late Abraham Shaffer. Endowed 1967.

Z. Matthew Stankiewicz Bursary

Value to be announced. Awarded annually to a deserving student, requiring financial assistance, who is entering or is enrolled in the School of Architecture at Carleton University. Donors: Friends, relatives and associates of the late Z. Matthew Stankiewicz. Endowed 1980.

Ormond M. Stitt Bursary Fund

To provide bursaries for deserving students in need of financial assistance. The fund has been made possible by a bequest of the late Miss Edith May Stitt, in memory of her brother, Ormond M. Stitt. Endowed 1966.

Isabella Ellen Taylor Memorial Bursary Fund

To provide bursaries to undergraduates in any year of course who are in need of financial assistance and have good academic standing. Donor: The late Daisy Elizabeth Taylor. Endowed 1969.

University General Bursary Fund

The fund is to provide bursaries in aid of students with satisfactory academic standing who, in the First or subsequent course-years, are in need of financial assistance. Established by the University in 1954.

Honourable Cairine Wilson Bursary

Awarded annually to a good student entering Carleton University or proceeding from one year of course to another and requiring financial assistance to complete his or her studies. The bursary has been made possible by a bequest of The Honourable Cairine Wilson, first woman member of the Canadian Senate. Endowed 1962.

manuscripts have been accepted for publication in the Carleton Library series. An annual award of \$1,000 to be applied against the costs of publication of the work, will be determined by a Grants Committee appointed by the Vice President (Academic). Applications or nominations having been received by the Committee, the recipient will be selected by the Committee on the basis of overall merit and contribution to the literature dealing in aspects of Canadian society. The Committee may decline to make an award in a given year for lack of meritorious candidates. The recipient will be expected to deliver a university public lecture dealing in the topic of the book at or near the time of publication.

Loan Funds

John Parker Loan Fund

To provide loans not exceeding \$1,000 each to students who have completed at least one successful year at Carleton University and who are not eligible to receive assistance from other sources of financial aid. This fund also provides emergency loans for sixty days or less to students whose funds from other sources have been delayed. Enquiries for application forms are available to students following interviews with the Awards Officer.

Government Aid programs:

See Student Services p. 20.

Further information regarding existing sources of scholarships, awards, bursaries and loans may be had from the Awards Office, telephone 231-3735.

Publication Grant

The John Porter Publication Grant

This grant, established in 1979 by friends and colleagues of the late John Porter, is open to authors of book-length works. The authors must be members of the Carleton University community, whose manuscripts have been accepted by a reputable publisher, or persons not affiliated with Carleton University, whose

Officers of the University

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R. Gordon Robertson, C.C., B.A., M.A., LL.D., D. de l'Univ., F.R.S.C.

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I.N. Smith, O.C., LL.D.

Norman Zagerman, B.A.

Retire 1982

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Professor J.D. Moizer, Dipl. Arch., A.R.I.B.A.

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Assistant Professor D.W. Smith, B.A., M. ès L., Ph.D.

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 Associate Professor J.B. Waugh, B.Com., M.B.A., C.A.
 Professor F. Wightman, B.Sc., Ph.D.
 Professor S.F. Wise, B.A., B.L.S., M.A.
 Associate Professor J.M. Yalden, B.A., M.A.

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 Mr. K. Falconer
 Dean N.D. Fenn, B.S., M.Ed.
 Professor D.A. George, B.Eng., M.S., Sc.D., P.Eng.
 Mr. J.I. Jackson, D.F.C., B.A., M.F.A.
 Ms. L. Maltby, B.Sc.
 Professor H.H.J. Nesbitt, B.A., M.A., Ph.D., D.Sc.,
 D.Sc. (Hon.), F.L.S., F.R.E.S., F.Z.S. (Clerk of Senate)

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Vice-President (Administration) and Bursar

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 D.I.C., Ph.D. (Imperial)

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Associate Dean of the Faculty of Arts

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Associate Dean of the Faculty of Engineering

To be appointed

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Robert G. Laird, B.A. (British Columbia) M.A., Ph.D. (Yale)

Associate Dean of the Faculty of Social Sciences

Donald Fraser, LL.B. (Queen's) LL.M. (York) of the Bar of Ontario

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Willem Gilles

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Librarian

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Registrar

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R. Gerald McKee, B.A. (Concordia)

Director of Personnel

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Director of the Physical Plant

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(Minnesota) M.R.A.I.C., P.Eng.

Director of Physical Recreation and Athletics

Keith N. Harris, B.A., B.P.H.E. (Queen's) M.S. (Physical
Education) (Springfield)

Co-ordinator of Counselling

Vincent Giannandrea, B.A., M.A. (Western Ontario)

Awards Officer

Coralie Bartley, B.A. (Queen's)

Director of Computing Services

John G. Cushing

Director of the School of Continuing Education

To be announced

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Carolina) C.A.
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Associate Professor of Journalism

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Institute of Technology)
Professor of Engineering

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D.S.W. (Columbia)
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Professor of Chemistry

Duncan M. Anderson, B.S.A. (O.A.C. Toronto) M.Sc.
(Western Ontario)
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(Oxford)
Professor of Political Science

Hymie Anisman, B.A. (Sir George Williams) M.A.
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J.W. ApSimon, B.Sc., Ph.D. (Liverpool)
Professor of Chemistry

F. Atienza, B.T. (Salamanca) Lic.T. (Innsbruck)
Lic.J.C. (Rome) D.J.C., D.S.T. (Ottawa)
Associate Professor of Spanish

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(Waterloo)
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Ph.D. (Cincinnati)
Assistant Professor of Commerce

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(Middle Temple)
Associate Professor of Law

Marion Barnett
Instructor in Psychology

J.A. Barnhill, B.S.B.A., M.B.A. (Denver) Ph.D.
(Washington)
Associate Professor of Commerce

R.G. Barradas, B.Sc. (Liverpool) Ph.D. (Ottawa)
F.R.I.C., F.C.I.C.
Professor of Chemistry

Glynn Barratt, M.A. (Cantab.) Ph.D. (London) F.R.A.S.
Associate Professor of Russian

Richard D. Barton, M.Sc., Ph.D. (McGill)
Associate Professor of Physics

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Ph.D. (Ottawa)
Associate Professor of Engineering

Isabel Law Bayly, B.Sc. (Carleton) M.A. (Toronto)
Ph.D. (British Columbia)
Associate Professor of Biology

William E. Beckel, B.A. (Queen's) M.Sc. (Iowa State)
Ph.D. (Cornell)
Professor of Biology

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Assistant Professor of Classics

Paul R. Beesack, B.A. (McMaster) A.M., Ph.D.
(Washington)
Professor of Mathematics

Keith Bell, B.Sc. (Leeds) D.Phil. (Oxford)
Professor of Geology

Robert Bell, B.Sc., Ph.D. (Queen's of Belfast)
Assistant Professor of Engineering

David Bellamy, B.A. (Carleton) M.A. (Queen's)
Assistant Professor of Political Science

J.G. Bellamy, B.A. (Oxford) M.A. (Oxford, Nottingham)
Ph.D. (Nottingham)
Professor of History

Gabriel Ben-Dor, B.A. (Hamline) Ph.D. (Princeton)
Visiting Professor of Political Science

David Bennett, B.A., Ph.D. (Liverpool)
Associate Professor of Geography

David Karl Bernhardt, B.A. (Toronto) M.A. (Michigan)
Associate Professor of Psychology

R.L. Beshara, B.Com. (Cairo) M.Sc. (Saskatchewan)
Associate Professor of Commerce

Thomas W. Betz, M.A. (Missouri) Ph.D. (Illinois)
Associate Professor of Biology

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Professor of Engineering

B.C. Bickerton, M.A. (Acadia)
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Associate Professor of Journalism

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(Toronto) P.Eng.
Associate Professor of Engineering

J. Lawrence Black, B.A. (Mount Allison) M.A. (Boston)
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*Sessional Lecturer in Art History**

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*Adjunct Professor of Biology**

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*Adjunct Professor of Biology**

J.M. Lindsey, Ph.D. (Cambridge)
*Demonstrator in Physics**

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*Sessional Lecturer in Accounting**

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*Sessional Lecturer in Law**

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*Sessional Lecturer in Law**

Don McGillivray, B.A. (Saskatchewan)
Sessional Lecturer in Journalism

B.M. McGugan, M.Sc. (Western Ontario) Ph.D. (Wisconsin)
*Sessional Lecturer in Management Studies**

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*Sessional Lecturer in Law**

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*Sessional Lecturer in Geography**

Carl Mollins, B.A. (Toronto)
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*Sessional Lecturer in Geography**

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*Sessional Lecturer in Law**

B.W. Morse, B.A. (Rutgers) LL.B. (British Columbia)
*Sessional Lecturer in Law**

B. Mortimer, Ph.D. (London)
*Sessional Lecturer in Mathematics and Statistics**

R.G. Mosley, B.A., LL.B. (Ottawa) of the Bar of Ontario
*Sessional Lecturer in Law**

N.B. Moyer, M.B.A. (Western Ontario)
*Sessional Lecturer in Management Studies**

P. Nadin-Davis, B.A., M.Phil. (Cambridge) LL.M. (Dalhousie)
*Sessional Lecturer in Law**

B.N. Nandi, B.Sc., M.Sc. (Calcutta) Dr.-Ing. (West Germany)
*Sessional Lecturer in Geology**

S.A. Narang, B.Sc., M.Sc. (Punjab) Ph.D. (Calcutta)
*Adjunct Professor of Chemistry**

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*Sessional Lecturer in Accounting**

G. Neufeld, M.Sc. (Manitoba) Ph.D. (Alberta)
*Sessional Lecturer in Management Studies**

I. Neville, C.A.
*Sessional Lecturer in Accounting**

K. Ng, Ph.D. (McGill)
*Sessional Lecturer in Mathematics and Statistics**

D. O'Malley, B.Arch. (Carleton)
*Sessional Lecturer in Architecture**

T.G. O'Neill, B.A.Sc. (Toronto) M.Eng. (Carleton) LL.B. (Ottawa) of the Bar of Ontario
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*Adjunct Professor of History**

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*Sessional Lecturer in Economics**

A. Parras, B.A. (Simon Fraser)
*Sessional Lecturer in Management Studies**

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*Adjunct Professor of Psychology**

D. Pharand, B.A., LL.B. (Dalhousie) LL.M. (Michigan) LL.D. (Paris) S.J.D. (Michigan) Dipl. International Law (Hague Academy)
*Adjunct Professor of Law and International Affairs**

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*Sessional Lecturer in Art History**

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*Sessional Lecturer in Architecture**

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Ron Poling
Sessional Lecturer in Journalism

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*Adjunct Professor of Chemistry**

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*Adjunct Professor of Geography**

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*Sessional Lecturer in Law**

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*Sessional Lecturer in Law**

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T. Rochefort, B.Com. (Carleton) M.B.A. (York)
*Sessional Lecturer in Management Studies**

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*Sessional Lecturer in Law**

J.J. Rooney, B.Com. (British Columbia) C.A.
*Sessional Lecturer in Accounting**

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Graham Rowley, B.A., M.A. (Cambridge) LL.D. (Saskatchewan)
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*Sessional Lecturer in Management Studies**

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*Sessional Lecturer in Geography**

M. Sablatash, Ph.D. (Wisconsin)
*Sessional Lecturer in Engineering**

Joan Sampson, B.Sc., M.Sc. (Acadia)
*Laboratory Co-ordinator in Biology**

D.F. Sangster, B.Sc., M.Sc. (McGill) Ph.D. (British Columbia)
*Adjunct Professor of Geology**

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Sessional Lecturer in Journalism

Ann Schau, B.Sc. (British Columbia) B.Mus. (Carleton)
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*Adjunct Professor of Biology**

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*Research Associate in Psychology**

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*Adjunct Professor of Psychology**

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*Sessional Lecturer in Industrial Design**

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A. Smith, B.Sc., M.Sc., Ph.D. (McGill)
*Research Associate in Psychology**

I.C.P. Smith, B.Sc., M.Sc. (Manitoba) Ph.D. (Corpus Christi)
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R.W. Stemp, B.A.Sc. (Toronto)
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Adjunct Professor of Engineering

J. Swan, B.A. (McGill) LL.B. (Alberta) LL.M. (London)
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*Adjunct Professor of Psychology**

G.D. Taylor, B.A., M.A. (British Columbia)
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*Sessional Lecturer in Architecture**

A.R. Thomas, B.Com. (Toronto) C.A.
*Special Lecturer in Accounting**

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*Sessional Lecturer in Law**

G.C. Topp, B.S.A., M.S., Ph.D. (Wisconsin)
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*Senior Demonstrator in Physics**

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*Sessional Lecturer in Physics**

Patrick Woodsworth, B.A., M.A., Ph.D. (McGill)
*Sessional Lecturer in German**

E.W. Wright, B.A.Sc. (Toronto) M.Sc. Ph.D. (Illinois)
*Adjunct Professor of Engineering**

H.R. Wynne-Edwards, B.Sc. (Aberdeen) M.A., Ph.D. (Queen's)
*Adjunct Professor of Engineering**

The Institution

1942

Ottawa Association for the Advancement of Learning established to develop Carleton College. At first the College offered only evening classes in introductory university subjects, with some courses in Public Administration.

1943

Ottawa Association for the Advancement of Learning Incorporated.

1945

Beginning of day classes and full-time teaching. Establishment of the Faculty of Arts and Science, including courses in Journalism, and First-year Engineering.

1946

Move from rented premises to the First Avenue campus, formerly Ottawa Ladies' College. First degrees awarded, three in Journalism and three in Public Administration.

1947

The College committed itself to complete Major and Honours courses, the Third year of the program being offered for the first time in 1947-48, the Fourth year in 1948-49, and the Fifth (Honours) year in 1949-50.

1949

First degrees in Arts, Science, and Commerce awarded. Formation of Senate.

1950

First Honours degrees in Arts and Science awarded.

1952

The Carleton College Act 1952 passed by the Ontario Legislature. This changed the corporate name to Carleton College. It also confirmed the power to grant degrees.

1952-53

Property for new campus acquired, on the site between the Rideau River and the Rideau Canal.

1953

Establishment of the School of Public Administration.

1954

Appointment of Architectural Associates for Carleton to prepare first master plan and to design first group of buildings. First honorary degree of LL.D. conferred on Dag Hammarskjöld, Secretary-General of the United Nations.

1955

First Master's degree awarded.

1957

The Carleton University Act, 1957. Establishment of the School of Engineering. Establishment of the Institute of Canadian Studies.

1959

Move to Rideau River campus, following construction of the Henry Marshall Tory Building (Science), the Maxwell MacOdrum Library, and Norman Paterson Hall (Arts).

1961

First degrees in Engineering awarded. First Ph.D. degree awarded.

1962

Students accommodated in residences on campus for the first time.

1963

Reorganization into Faculties of Arts, Engineering, Science, and Graduate Studies. Committee on Soviet and East European Studies established.

1966

Establishment of the School of International Affairs. Establishment of the School of Commerce. Comparative Literature Committee established.

1967

Integration of St. Patrick's College as a division of the Faculty of Arts. School of Social Work became part of the Faculty of Arts.

1968

Establishment of the School of Architecture. New University Government established with student representatives at all levels of the University system from Department to Board of Governors. First year of the academic exchange agreement between Carleton and the University of Leningrad.

1969

Free choice First year initiated for the Faculty of Arts. Linguistics Committee established.

1970

Agreement completed between Carleton and University of Ottawa to accept "visiting students" at the graduate level. Biochemistry degree program initiated.

1971

Unified Liberal Arts Program established for St. Patrick's College. General Science Degree program established with Environmental Studies program available.

1972

School of Social Work is accommodated on the Rideau River campus. A one-year French program offered at St. Patrick's College for students wishing to improve their knowledge of the French language and culture by one year's intensive study. Exchange program with the University of Chambéry, France.

1973

First degrees in Architecture awarded. St. Patrick's College moved to a new facility on the Rideau River campus. Establishment of the School of Industrial Design. New Athletics complex, with a fifty-metre pool and a fitness centre opened.

1974

Faculty of Graduate Studies renamed Faculty of Graduate Studies and Research. School of International Affairs renamed The Norman Paterson School of International Affairs. First courses offered off-campus in Lanark County and downtown Ottawa. St. Patrick's College division held first Convocation ceremony at new location on Rideau River campus. Master of Journalism program approved for September 1974. Master of Arts program in Anthropology approved for September 1975. Master of Arts program in Religion approved. Program leading to Certificate in Teaching of English as a Second Language established. Academic exchange between Carleton and the Institute of Cultural Relations, Budapest, Hungary, September, 1974.

1975

Lester B. Pearson Chair for International Affairs approved. Establishment of Gerhard Herzberg Lecture Series in Science. First students enrol in joint Master of Public Administration program, offered in conjunction with the University of Ottawa. Scholarships established for part-time students. CKCU-Radio Carleton has FM licence approved. New undergraduate programs introduced in Canadian Studies, and Computing Science. A program in Film Studies approved. First Dunton Alumni Award presented.

1976

Creation of The Paterson Centre. Division of the Faculty of Arts into two separate faculties: the Faculty of Arts and the Faculty of Social Sciences. First Master of Journalism degrees awarded.

1977

Criminology and Corrections Program begun at St. Patrick's College, April. Exchange programs with two Nigerian universities: Ahmadu Bello University in Zaria and University of Ife in Ile-Ife.

1978

School of Continuing Education established. Credit courses offered on cable television, September. Institute of Biochemistry established.

1979

St. Patrick's College ceased to operate as an academic unit of the University. Academic programs of the College continue as University programs, except for the Unified Liberal Arts Program. Department of Film Studies established.

First Marston LaFrance Memorial Lecture presented; Ph.D. program in English and French Canadian Literature begun; joint Ph.D. program in economics with University of Ottawa established.

1980

Undergraduate School of Computer Science established.

Enrolment

In the fall of 1979, there were 7,361 undergraduate students registered at the University; undergraduate students taking courses on a part-time basis numbered 5,236.

Presidents

1942-47

Henry Marshall Tory

1947-55

Murdoch Maxwell MacOdrum

1955-56

James Alexander Gibson (*Acting*)

1956-58

Claude Thomas Bissell

1958-72

Arnold Davidson Dunton

1972-78

Michael Oliver

1979

James Downey (*Pro tempore*)
January 1—May 15

1979-

William Beckel

Chancellors

1952-54

Harry Stevenson Southam

1954-68

Chalmers Jack Mackenzie

1969-73

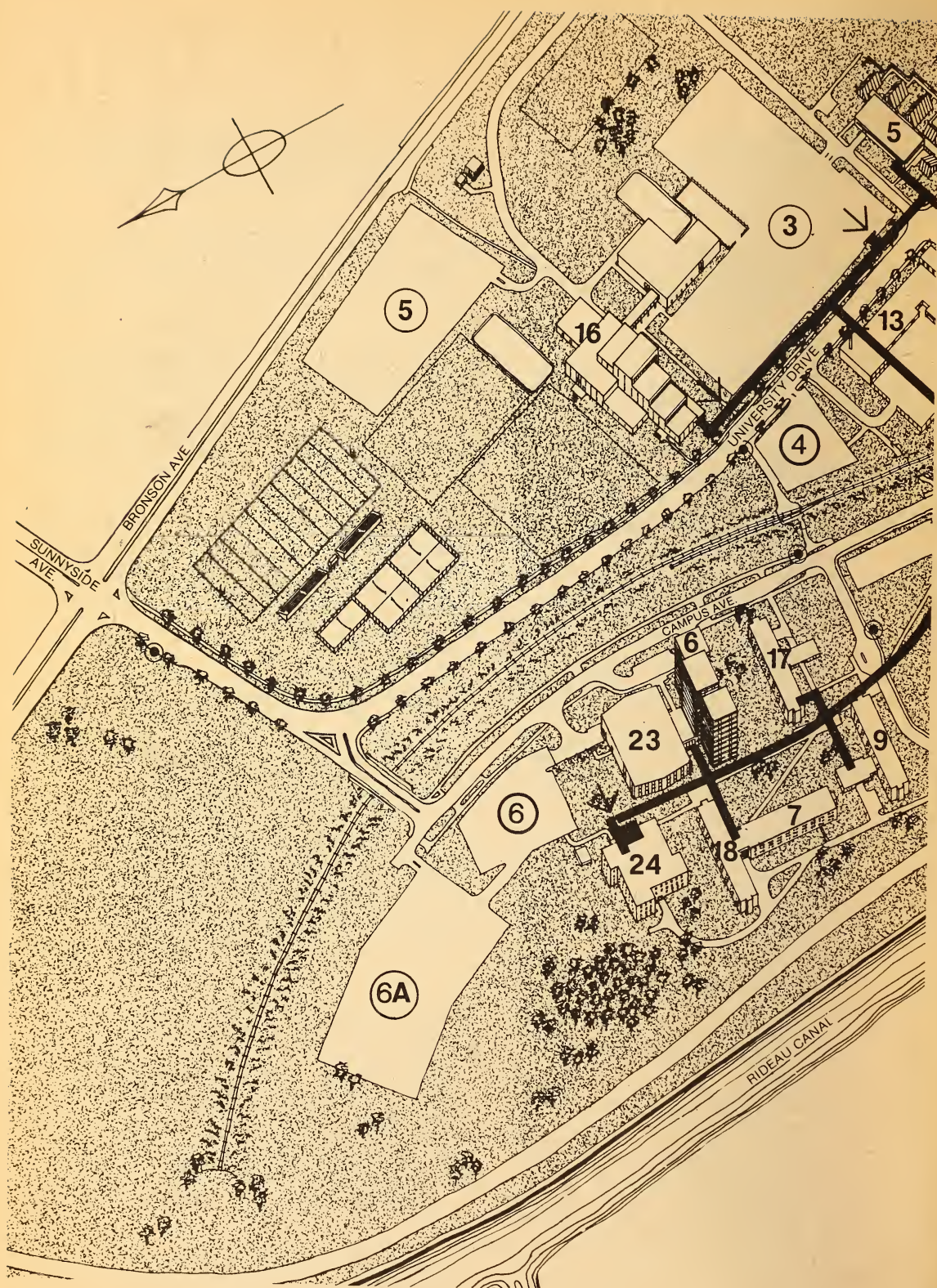
Lester Bowles Pearson

1973-80

Gerhard Herzberg

1980-

R. Gordon Robertson

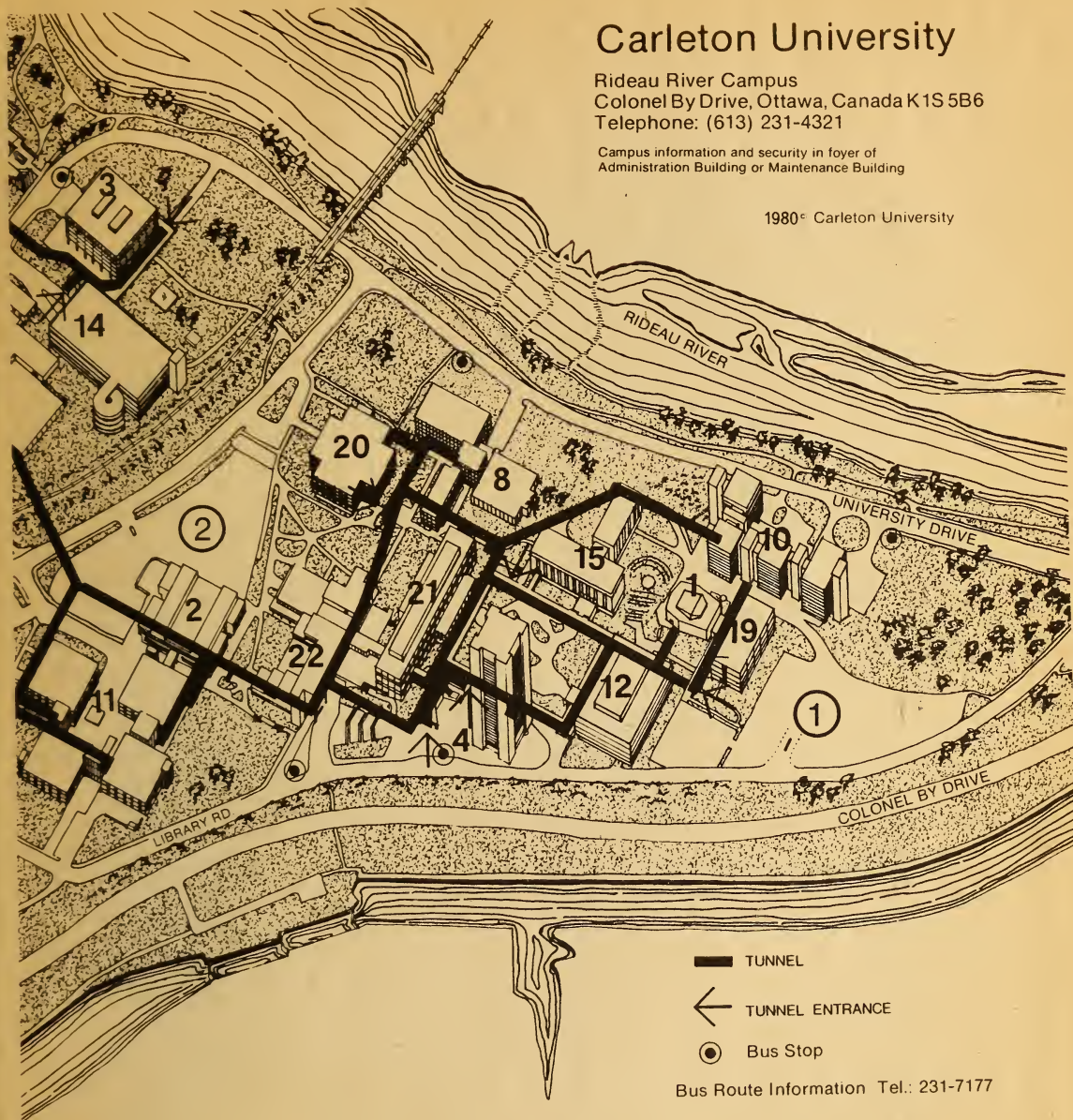


Carleton University

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Telephone: (613) 231-4321

Campus information and security in foyer of
Administration Building or Maintenance Building

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Bus Route Information Tel.: 231-7177

Carleton University Campus

- | | | |
|-------------------------------|--------------------------------|----------------------------|
| 1. Alumni Theatre | 10. Loeb Building | 19. Southam Hall |
| 2. Architecture Building | 11. Mackenzie Building | 20. Steacie Building |
| 3. Administration Building | 12. MacOdrum Library | 21. Tory Building |
| 4. Arts 1 Tower | 13. Maintenance Building | 22. University Centre |
| 5. Environmental Laboratories | 14. Parking Garage | 23. University Commons |
| 6. Glengarry House | 15. Paterson Hall | 24. St. Patrick's Building |
| 7. Grenville House | 16. Physical Recreation Centre | |
| 8. Herzberg Laboratories | 17. Renfrew House | |
| 9. Lanark House | 18. Russell House | |

Parking Lots (2), (5), etc.

Note: Where the subject matter referred to appears on more than one consecutive page, only the first page number is given.

Academic Clubs and Societies:

- Architecture **322**
- Arts and Social Sciences **85**
- Engineering **302**
- Industrial Design **345**
- Science **362**

Academic Dress **48, 51**

Academic Information Service (Continuing Education) **72**

Academic Standing **43** (see also Faculties and Schools)
Academic Summer Advisory Service (Arts and Social Sciences) **94**

Academic Year **10-12**

Accelerated Progress **29, 43, 90, 290, 355**

Accounting **17, 111**

Accreditation of the University **13**

Admission, Dates of Entry **29**

Admission, Early **34**

Admission Procedures **29, 34**

Admission Requirements and Regulations **29** (see also Faculties and Schools)

Admissions, Office of **17, 18**

Administration, Officers of **457**

Aeronautical Engineering: see Mechanical and Aeronautical Engineering

African Studies **17, 428**

Alumni Association **18, 26**

Anthropology: see Sociology and Anthropology

Appeals **13, 71, 87**

Applications for Admission, Dates **10-12, 34**

Arabic **258**

Architecture, School of **17, 321**

Art History **17, 114**

Arts, Faculty of **75, 83**

Arts and Social Sciences Courses, Interdisciplinary **431**

Asian Studies **17, 429**

Assistance, Financial: see Awards; Loan Funds

Athletics and Recreation **18, 20**

Auditing Courses **40, 87**

Awards **20, 441**

Awards Office **18, 20, 455**

Biochemistry, Institute of **17, 363**

Biology **17, 120, 365**

Board of Governors **456**

Bookstore **18, 23**

Bulgarian **260**

Bursaries **21, 453**

Business Office **18**

Business Russian **260**

Calendar, Undergraduate:

— How to Use **13**

— Purpose of **13**

Calendars, Annual, for 1980 and 1981 **496**

Calendars, Others Published **14**

Canada Employment Centre **18, 21**

Canadian Studies **17, 121**

Career Counselling **18, 21**

Carleton through the Years **483**

Certificate Programs:

— English Language and Composition **30, 141**

— Law Enforcement Studies **17, 30, 207**

— Public Service Studies **30, 106**

— Teaching of English as a Second Language **17, 30, 209**

Challenge for Credit **40**

Chancellor(s) of the University **456, 485**

Chemistry **17, 373**

Civil Engineering **17, 292, 294, 304**

Classical Civilization **124, 126**

Classics **17, 124**

Classification of Students **14, 69**

Colleges of Applied Arts and Technology (Ontario), Admission from **32**

Collèges d'Enseignement Général et Professionnel (Québec), Admission from **33**

Commerce **17, 95** (see also Management Studies)

Comparative Literature **17, 129**

Computer Science, School of **55**

Computing Services **24**

Concurrent Studies (High School and University) **29**

Conference Services **22**

Continuing Education, School and Offices **17, 18, 69**

Counselling, Academic and Personal **18, 23**

Counselling, Career **18, 21**

Counselling Services **18, 21, 23**

Course Changes **41, 87**

Course Credit System **89, 300, 359**

Course Load **70** (see also Faculty, School or Department concerned)

Course Numbering System **15**

Course Requirements: see Faculty, School or Department concerned

Course Selection **40, 71**

Courses for Non-Majors **437**

Credit, Transfer to Carleton **40** (see also Faculties and Schools)

Credit, Transfer to other Institutions **71**

Criminology and Corrections **17, 130**

Cross-Referenced Courses **40**

Degrees Offered, Summary **35-39**

Delinquent Accounts **48**

Departmental Numbering System **15**

Deferred Final Examinations **44** (see also Faculties)

Development Office **18**

Diploma in Music **30, 219**

Directed Interdisciplinary Studies **17, 189**

Early Admission **34**

East European Studies: see Soviet and East European Studies

Economics **17, 132**

Electrical Engineering **293, 296**

Electronics **17, 308**

Engineering, Faculty of **17, 289**

English as a Second Language 17, 30, 209, 211
 English Language and Composition, Certificate 30, 141
 English Language and Literature 17, 140
 English, Proficiency in 31, 41
 Enrolment, 1979-1980 484
 Equivalent Certificates for Admission 31
 Evaluation of Grades 43
 Examination Dates 10, 11, 12, 44
 Examination Fees 48
 Examination Regulations 44 (see also Faculties and Schools)
 Extension Students 14, 69

Faculty Members 458
 Faculty of Arts 75, 83
 Faculty of Engineering 289
 Faculty of Graduate Studies and Research 16
 Faculty of Science 355
 Faculty of Social Sciences 79, 83

Fees:
 — Examination Fees 49
 — Foreign Students' Tuition Fees 46
 — Late Registration Fees 47
 — Locker Fees 48
 — Method of Payment 47
 — Parking Fees 49
 — Senior Citizens' Tuition Fees 14, 47
 — Transcript Fees 48
 — Tuition Fees 46

Film Studies 17, 149

Final Examinations 44

Financial Assistance 20, 71 (see also Awards; Loan Funds)

Food Services 19, 22

Foreign Students' Fees 46

Foreign Students: see Overseas Students; see also Admissions; Fees

French 17, 152

Full-Time Students 14, 46

General Arts Program: see Interdisciplinary Studies (Directed)

General Information 13

General Regulations of the University 27

Geography 17, 162, 379

Geology 17, 381

Geology Work-Study Program 384

German 17, 173

Glossary of University Terms 9

Government Aid Programs 20

Gowns and Hoods, Deposits 48

Grade-Raising Examinations 44, 47 (see also Faculty regulations)

Grades, Evaluation of 43

Grades, Release of 45

Grades, Review of 44

Grading System 43 (see also Faculties and Schools)

Graduate Studies and Research, Faculty of 16

Graduation Regulations 43 (see also Faculty, School or Department concerned)

Greek (Classical and Modern) 125, 258

Handicapped Persons, Facilities for 23

Hebrew 258

Health Regulations 50

Health Services 18, 22

High School Applicants:

— Ontario 30

— Québec 31

— Other 31

High School Liaison Office 19

History 17, 177

Hours of Operation, University Offices 17

Housing for Students 19, 21

Humanities Courses, Interdisciplinary 431

Hungarian 260, 263

Income Tax Certificates 47

Industrial Design, School of 17, 339

Information Carleton 19

Information Office 19

Institute of Biochemistry 17, 363

Institute of Soviet and East European Studies 17, 108, 279

Instruction, Officers of 458

Integrated Science Studies 17, 390, 430

Interdisciplinary Courses 187, 351, 392, 427, 431

Interdisciplinary Studies, Directed 17, 189

International Affairs 17

Introducing Carleton 7

Italian 17, 190

Jobs: see Canada Employment Centre

Journalism 17, 100, 193

Languages:

— Arabic 258

— Bulgarian 260

— Comparative Literature 17, 129

— English 17, 140

— English as a Second Language 17, 30, 209, 211

— English Language and Composition 30, 141

— French 17, 152

— German 17, 173

— Greek (Classical and Modern) 125, 258

— Hebrew 258

— Hungarian 260, 263

— Italian 17, 190

— Latin 126

— Linguistics 17, 208

— Macedonian 260

— Norse (Old) 147

— Portuguese 280, 285

— Russian 17, 259

— Sanscrit 258

— Serbo-Croatian 260

— Slavic Languages 260, 263

— Slavonic (Old) 260

— Spanish 17, 280

— Ukrainian 260, 263

Late Registration 40, 47

Latin 126

Law 17, 197

Law Enforcement Studies, Certificate 17, 30, 207

- Letter of Permission 88
- Levels of Entry 29
- Library 18, 50
- Linguistics 17, 208
- Loan Funds 20, 71, 455
- Lockers 48
- Macedonian 260
- Management Studies 17, 213
- Map of the Campus 486-487
- Mass Communication 17, 100, 193
- Materials Engineering: see Electronics and Materials Engineering
- Mathematics and Statistics 17, 217, 394
- Mature Matriculation 33, 70
- Mechanical and Aeronautical Engineering 293, 298, 311
- Medals 20, 441
- Medical Clinics 19, 22
- Medical Services and Facilities 18, 19, 22
- Mid-Term Examinations 44
- Music 17, 30, 218
- Music, Bachelor of Music Degree 38, 219
- Music, Diploma 30, 219
- Non-Majors, Courses for 437
- Norse (Old) 147
- Numbering System for Courses and University Departments 15
- Off-Campus Courses 14
- Off-Campus Housing 22
- Officers of the University 456
- Offices of the University 17
- Ombudsman 24
- Ontario Applicants for Admission 30, 32
- Operations Research 401
- Organization of the University 13
- Ottawa University — Carleton University Visiting Students' Program 42, 88
- Overdue Accounts 47
- Overseas Students, Special Requirements 31, 46
- Overseas Students' Advisory Service 19, 23
- Parking 49, 486-487
- Part-Time Students 14, 46, 69
- Philosophy 17, 224
- Physics 17, 415
- Placement and Career Counselling: see Canada Employment Centre
- Political Science 17, 231
- Portuguese 280, 285
- Post-Secondary Institutions, Transfers from 32
- President(s) of the University 456, 484
- Probation 43 (see also Faculties and Schools)
- Program Changes 41 (see also Faculties and Schools)
- Promotion 43 (see also Faculties and Schools)
- Psychology 17, 241, 423
- Public Administration 17, 105, 251
- Publication Grant 455
- Public Service Studies, Certificate 30, 106
- Qualifying University Year 30
- Québec Applicants for Admission 31, 33
- Readmission 34, 87
- Recreation: see Athletics and Recreation
- Refund of Fees 41, 47, 70
- Registrars' Offices 14, 17
- Registrarial Services 14
- Registration Dates 10-12
- Registration Procedures 40 (see also Faculties and Schools)
- Regulations, Administration of 13 (see also Faculties)
- Release of Grades 43
- Religion 17, 252
- Residence Requirements for Degree Programs 41, 88, 360
- Residences 19, 21
- Review of Grades 44
- Russian 17, 259
- Sanskrit 258
- Scholarships, Entrance and In-Course 441
- School of Architecture 17, 321
- School of Commerce 17, 95
- School of Computer Science 55
- School of Continuing Education 17, 69
- School of Industrial Design 17, 339
- School of Journalism 17, 100, 193
- School of Public Administration 17, 105, 251
- Science, Faculty of 355
- Science Courses, Interdisciplinary 431
- Scientific Russian 260
- Senate of the University 456
- Senior Citizens' Tuition Fees 14, 47
- Serbo-Croatian 260
- Sessions, Summer, Winter 10
- Slavic Languages 260, 263
- Slavonic (Old) 260
- Social Sciences, Faculty of 79, 83
- Social Work 17
- Sociology and Anthropology 17, 264
- Soviet and East European Studies, Institute of 17, 108, 279
- Spanish 17, 280
- Special Students 14, 16, 34, 69
- Standing in Courses 43 (see also Faculties and Schools)
- Statistics: see Mathematics and Statistics
- Student Services 18, 20
- Students' Association 19, 25
- Students, Classification of 14, 69
- Summer Session 10, 12
- Supplemental Examinations 44, 48 (see also Faculties and Schools)
- Systems Engineering and Computing Science 17, 316

- Table of Contents 3
- Take-Home Examinations 44
- Teaching of English as a Second Language, Certificate 17, 30, 209
- Technology, Society, Environment Studies 17, 432, 433
- Terms: First, Second 10
- Transcripts, Academic 48
- Transfer of Credit to Carleton 40
- Transfer of Credit to Other Institutions 71
- Transfers from Post-Secondary Institutions 32
- Translation: Russian/English 259
- Tuition Fees 46
- Tunnels: see Map 486-487
- Ukrainian 260, 263
- Undergraduate Degree Programs, Summary 35-39
- University Centre 24
- University Offices 17
- University of Ottawa — Carleton University Visiting Undergraduate Students' Program 42, 88
- Urban Studies 17, 435
- Winter Session 10
- Withdrawal from Courses or from the University 41, 46, 70, 88
- Women's Studies 17, 436
- Work-Study Program, Geology 384

Editor:
Ann Semple

Typesetting:
Professional Graphics, Translation and Advertising
Limited

Printing:
Tyrell Press Limited

Cover Design:
Marc Guertin, Quorum Graphics

1980

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